THE KURGAN CULTURE

AND THE

INDO-EUROPEANIZATION OF EUROPE

***

Selected articles from 1952 to 1993

Marija Gimbutas

Edited by
Miriam Robbins Dexter and Karlene Jones-Bley

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The Kurgan Culture and
The Indo-Europeanization of Europe
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Marija Gimbutas

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Cover: A montage of elements from a rock engraving and a stele. Sun, halberd, daggers, and horse from a rock engraving at Cemmo. (*After* Anati 1972). Wagon and draft animals from a stele at Lagundo, Alto Adige, northern Italy. (*After* Anati 1967).
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Abbreviations

AA	*American Anthopologist*
AAASH	*Acta Archaeologica. Academiae Scientiarum Hungarica*
AAH	*Acta Archaeologica Hungarica.* Academiae Scientiarum Hungaricae, Budapest.
AH	Archaeologica Hungarica
AJA	*American Journal of Archaeology*
BAR	British Archaeological Reports
BR-GK	*Berichte der Römisch-Germanischen Kommission*
COWA	*Chronologies in Old World Archaeology.* H. W. Ehrich (ed.). 2nd ed. Chicago: University of Chicago Press, 1965.
EFAP	*L'Europe à la fin de l'âge de la pierre,* Actes du Symposium consacré aux problèmes du Néolithique européen, Prague 12 October 1959. Praha: Editions de l'Académie tchécoslovaque des Sciences
ESA	*Eurasia Septentrionalis Antiqua*
Glasnik	*Glasnik Zemaljskog Muzeja u Sarajevu (Bulletin du Muzé de la République Socialiste de Bosnie-Herzégovine à Sarajevo)*
IE and IE	*Indo-European and Indo-Europeans,* George Cardona, Henry M. Hoenigswald, and Alfred Senn (eds.), Philadelphia: University of Pennsylvania Press.
IF	*Indogermanische Forschungen*
JIES	*Journal of Indo-European Studies*
KSIA	*Kratkie Soobshchenija Instituta Arkheologii*
KZ	*(Kuhns) Zeitschrift für vergleichende Sprachforschung*
MFMÉ	*Móra Ferenz Múzeum Évkonyve*
MIA	Materialy i Issledovanija po Arkheologii
Mit.Arch.In.Ung.	*Mittelungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften,* Budapest.
PIE AL	*Proto-Indo-European: The Archaeology of a Linguistic Problem* (Studies in honor of Marija Gimbutas). Susan Nacev Skomal and Edgar C. Polomé (eds.). Washington, D.C.: Institute for the Study of Man.
PPS	*Proceedings of the Prehistoric Society*
PZ	*Prähistorische Zeitschrift*
Sl. Arch.	*Slovenská Archeológia*
SA	*Sovetskaja Archeologija*
SCIV	*Studii şi Cercetări Istorie Veche*
SE	*Sovetskaja Etnografija*
ŠV	*Študijné Zvesti*

Editors' Forward

At the time of her death in early 1994, Marija Gimbutas was working on several projects, one of which was an anthology of her papers related to her theory of the Indo-European homeland and the Indo-Europeanization of Europe. Despite the untimeliness of her death, the publishers of the *Journal of Indo-European Studies* believed that this was an important project which should go forward, and they asked us to finish the work. Both of us accepted this responsibility with eagerness and honor. Although finishing someone else's work is a daunting task, Professor Gimbutas had already completed many of the revisions – particularly the dating – and our job was greatly eased. All substantive changes are hers, and the editorial changes have been kept to a minimum, consisting primarily of standardizing spellings, formats, and bibliographies; we have tried to be as consistent as possible. The spelling conventions we chose are based on her later works, but we have not changed the spelling in the titles of articles, *e.g.* Article 2 (1963). Except for normalizing some of the more widely used terms, such as Yamna, and authors' names, such as Telegin, and because we were unable to locate a number of the Russian and Ukrainian articles, we have not attempted to normalize the transliterations and most appear here as they appeared in the original articles; unfortunately, the result is a mixture of conventions of transliteration.

Despite the changes in the former Soviet Union, Yugoslavia, and Czechoslovakia, we have retained the original political designations, but the reader is advised to remember that where sites are identifed the references are to the map of Europe prior to 1989.

As far as possible we have checked the bibliographical references and filled in any gaps and verified the entries. Full references for items that were "in press" at the time of the article originally appeared have been supplied. In a few cases, we have supplied references which were not clearly stated in the text. These additions are listed separately. Where possible, footnotes have been incorporated into the text, particularly when they were bibliographical, *e.g.* Article 4. In the interest of space, we have used each illustration only once and then referred to it on subsequent occasions.

The articles are presented in the order Professor Gimbutas wanted and are, except for Article 3, in chronological order. Article 3 is a revision of her 1966 contribution to *Chronologies in Old World Archaeology*, ed. Robert Ehrich, and it went through additional revision before it was published in the second edition in 1992. She was clearly working on Article 1 at the time of her death because her notes to it are incomplete. We have left the article as she left it, adding only an additional bibliography and a clarification in the presentation of dates (see Article 1, footnote 6). The last article (number 16) represents her final thoughts on the Indo-European question. Because this article existed only in draft form, portions have been rewritten for clarity and a few references added where she had indicated them.

Since her first article in the 1950's, a number of revisions in the scholarly representation of Proto-Indo-European sounds, particularly with regard to "long" vowels and the so-called laryngeal phonemes, have taken place. Not unexpectedly, Professor Gimbutas employed the orthographic conventions for representing PIE reconstructions that were current at the time of her research. Now that a range of her ideas on IE subjects, which spans over four decades, has been gathered in one volume, the differences in these conventions become a minor source of irritation to the non-specialist reader. To gain some consistency in this overview, we have maintained her original reconstructions but Martin Huld has compiled an appendix with the currently accepted reconstructions and cognates along with additional notes.

Marija Gimbutas was a great believer in radiocarbon dates from their inception. Despite the many changes and adjustments in their presentation, she never wavered in her faith in them and was an early advocate of calibration. In Article 4, she began differentiating between calibrated and uncalibrated dates. In these articles, she used the convention of BP (before present) = raw radiocarbon dates, *e.g.,* 4660 ± 100 BP; BC = calibrated date, *e.g.,* 3200 BC or calendrical dates; and b.c. represents uncalibrated dates.

We believe that this volume will be useful to both those who agree and those who disagree with her ideas on the Indo-European homeland. These articles show the evolution of Professor Gimbutas' ideas and how she unhesitatingly adopted new ideas and methods which she believed correct. This is particularly clear with regard to her use and revision of radiocarbon dates. She was driven by evidence, not theory. Although she advocated a militant intrusion into Old Europe, migration was not the totality of her theory. She continually wrote of the development of indigenous groups and could easily envision internal influences as the source of social change when the evidence warranted it. For her, kurganization was a process of internal change brought about by external influence.

Marija Gimbutas held accurate data to be a virtue that outweighed all other considerations. Once, discussing homeland theories, she told a graduate student, "I love Lithuania, but I cannot place the IE homeland there as others have done; the archaeological facts will not permit it." Some of her critics did not understand how facts constrained Professor Gimbutas, even when her intuitions drew her in other directions. A famous linguist once criticized her 1956 statement that the Kurgan homeland was set at *c.* 2500 BC, because the date was almost two millennia too late by his reckoning. Despite this serious problem, Professor Gimbutas' intuition told her that the kurgans were built by the Indo-Europeans and she continued in this belief working on the problem of the dates. When, in later years she accepted the radiocarbon figures which pushed the date to an earlier and more acceptable 4500 BC, the linguist wondered fuzzily why she hadn't just used that date all along. Naturally, she disliked being dismissed or misread, but she wasn't adverse to justified criticism, reasonable scrutiny, or new information.

This volume presents all of Marija Gimbutas' major articles on the Kurgan culture and the Indo-Europeans and thus summerizes her thinking on the Indo-European problem. It enables the reader to understand the evolution of her thoughts and the scope of her interdisciplinary work. She was a courageous thinker. As her work, particularly over the past 15 years, has shown, Marija Gimbutas was not afraid to take chances. "Others," she once said, "may not agree with you, but what does that matter? If you don't take chances, you will never go anywhere, and you will never advance scholarship."

We would like to thank the publishers of the *Journal of Indo-European Studies* for asking us to edit this volume. We also want to thank Jules Hart for all of her valuable bibliographic work, Debra Eve for her comments on the last article in the volume, and we wish to extend our gratitude to Professor Gimbutas' daughter, Zivile Gimbutas, for her many kind words of encouragement. Martin Huld deserves special thanks for contributing the linguistic appendix which he adapted from a larger forthcoming publication.

Most particularly, we want to thank the University of Chicago Press, the University of Pennsylvania Press, the *Times Literary Suppliment*, the American Anthropological Association, *Archives suisses d'antropologie générale*, Gustav Fischer Verlag , and Professors Thomas Markey and John Greppin for allowing us to reprint Professor Gimbutas' articles which were first published by them. Without these articles, this anthology would not have presented as full a picture of the evolution of her work and the scope of her thought on Indo-European matters.

The ideas in this volume remain those of Marija Gimbutas, but we are responsible for any errors.

KJ-B and MRD

Introduction

This selection of articles, published over a forty-year period, documents the history of Kurgan theory, *i.e.*, the reconstruction of Proto-Indo-European culture based on archaeological materials. Since the early 1950s, I have been convinced that deciphering Proto-Indo-European language and culture involves more than Indo-European linguistics – that archaeological evidence should be incorporated into linguistic reconstructions. The opportunity for such research came at Harvard when I worked in eastern European prehistory and came to know the Neolithic-Eneolithic culture of South Russia by checking every single excavation report. In my resulting book, *Prehistory of Eastern Europe* (1956), I first introduced the term "Kurgan culture," a blanket name for the mobile, warlike, pastoral, patriarchal culture occupying the steppe zone north of the Black Sea and Caucasus Mountains. At the same time, I was preparing a book on the Balts (my own ancestors) and their culture, language, origins, and mythology. Thus, I surveyed the problem of Indo-European origins up from its earliest roots, and down from historic times to the Neolithic. These experiences instilled in me the importance of interdisciplinary work, *i.e.*, combining linguistics, mythology, archaeology, and historical records.

I next tackled the traumatic cultural change that occurred in Europe at the end of the Copper Age (or Eneolithic). In 1956, I presented a paper at the International Council of Ethnological Sciences in Philadelphia entitied "The Culture Change in Europe in the Second Millennium." (At that time radiocarbon technology was not available; my chronology was much too late.) I explained that this obvious transformation was caused by incursions of war-like steppe people from the east. I considered current popular European hypotheses in the middle of this century unacceptable, since they ignored archaeological evidence. In 1959, Pedro Bosch-Gimpera first published his book on Indo-European origins, in Spanish. (The French translation appeared in 1961 as *Les Indo-Européen Problèmes Archaeologiques.)* Bosch-Gimpera postulated that Indo-Europeans evolved from local European Neolithic and Mesolithic cultures. I differed strongly with his ideas in a 1963 article in *American Anthropologist* entitled "The Indo-Europeans: Archaeological Problems" (included in this monograph). Much of what I suggested in that now thirty-year-old article remains valid today. Before radiocarbon dates were available for the east European Neolithic, however, I based my chronologies primarily on stratigraphy and typologies. Radiocarbon technology and dendrochronology (tree ring counting) tremendously impacted my understanding of when the first Kurgan incursions into central Europe occurred. I promptly abandoned my earlier belief that drastic changes commenced in Europe in the 2nd millennium BC. During the 1966 Indo-European Conference in Philadelphia, I presented a Kurgan chronology revised for the 5th and 4th millennia BC. (See the 1970 article "Proto-Indo-European Culture: The Kurgan Culture During the Fifth, Fourth and Third Millennia BC.")

Once radiocarbon chronology clarified these chronologies, many other problems could be interpreted. It became clear that east-central Europe reached a high level of civilization that included metallurgy and script sometime during 5500-5300 BC. In 1972, I introduced the term "Old Europe" to describe European culture before the Indo-Europeans. (See "Old Europe *c.* 7000-3500 BC: The Earliest Indo-European Civilization Before the Infiltration of Indo-European Peoples.") Continuous waves of Kurgan people initiated the fall of Old Europe starting soon after the mid-5th millennium BC. They repeatedly assailed Old Europe in the mid-4th millennium BC, and recommenced their onslaught in the early 3rd millennium BC. (See the 1977, 1978, and 1980 articles included in this monograph.)

Since the early 1970s, most of my investigation has centered on Old European civilization, especially its religion. This research resulted in my books *Gods and Goddesses of Old Europe* (Los Angeles: University of California Press, 1974), Language of the Goddess (San Francisco: HarperSanFrancisco, 1989), *The Civilization of the Goddess: The World of Old Europe* (HarperSanFrancisco 1991), and *Europe Before Patriarchy: The Living Goddess* (forthcoming).[1] Deciphering Old European religion and its symbolic structure will assist our understanding of the European cultural substratum. My investigation has made it clear that Old European culture was the antithesis of Indo-European culture. (I present an abbreviated version of the vast disparities in the two cultures in "The Collision of Two Ideologies," included in this monograph.) The clash between these two ideologies led to the transformation of Old Europe. These changes marked the transition from matrilineal to patrilineal order, from a learned theocracy to a militant patriarchy, from a sexually balanced society to a male-dominated hierarchy, and from a chthonic goddess religion to a Indo-European sky-oriented pantheon of gods. Research into Indo-European origins cannot be separated from the study of mythology and religion, or from linguistic research into the cultural substratum of Europe. In each area of Europe, linguists continually uncover substratum languages. An assumption that the earliest European agriculturists were Indo-European speakers is totally unacceptable.

The last article of this monograph recapitulates what I have postulated in a series of previous articles and adds new information accumulated during the last decade.

Throughout my forty years researching the kurgans of south Russia, I have not changed my theories radically (except for their chronology). They are continually strengthened by new archaeological data. Today, certain essential points can be accepted:

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[1] At the time of this printing, *Europe Before Patriarchy: The Living Goddess* is being finished and edited by Miriam Robbins Dexter. [Eds.]

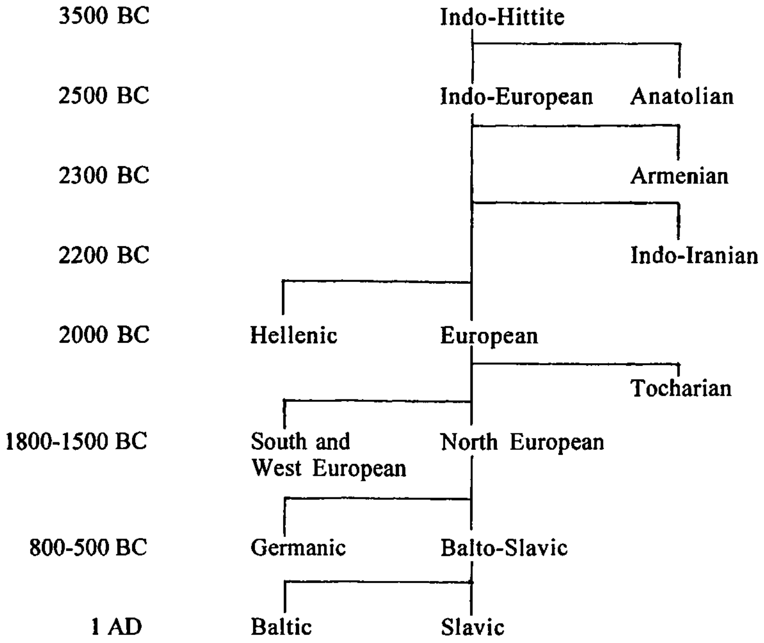
- Kurgan culture came into existence in the first half of the 5th millennium BC when, by means of domesticated horse, horse-riding, and wheeled transport, pastoral people overwhelmed the Russian steppe north of the Caucasus and reached the borders of Old Europe in the Dnieper basin;
- Kurgan theory does not depict a thousand-year-old homeland, but recounts a specific situation created by social and economic conditions, especially a hierarchical/patriarchal social structure and horse domestication;
- From the mid-5th millennium onward, the pastoral people of South Russia came into close contact with Old Europe, and from around 4300 BC these pastoralists started a westward push that eventually caused the great civilization of Old Europe to disintegrate.

It took at least two thousand years for Europe to become Indo-Europeanized – a process of cultural transformation that included the hybridization of two very different cultures. The "winners" were those who had arms, horses and a hierarchical society. What culture was like in the Volga basin before 5000 BC, and exactly how and when patriarchy emerged, remain urgent questions of global interest to be answered in the future.

Marija Gimbutas, 1993
Topanga, California

On the Origin of North Indo-Europeans*

In a recent paper Trager and Smith (1950) have presented a chronological scheme of the development of the "Indo-Hittite" group of languages, descended from a hypothetical tongue held to be the common parent language of "Indo-European" and "Hittite."[1] The year 3500 BC is set by the authors as the probable date of "Indo-Hittite" unity. The diagram accompanying the article shows the differentiation of "Indo-Hittite," later "Indo-European," as follows:



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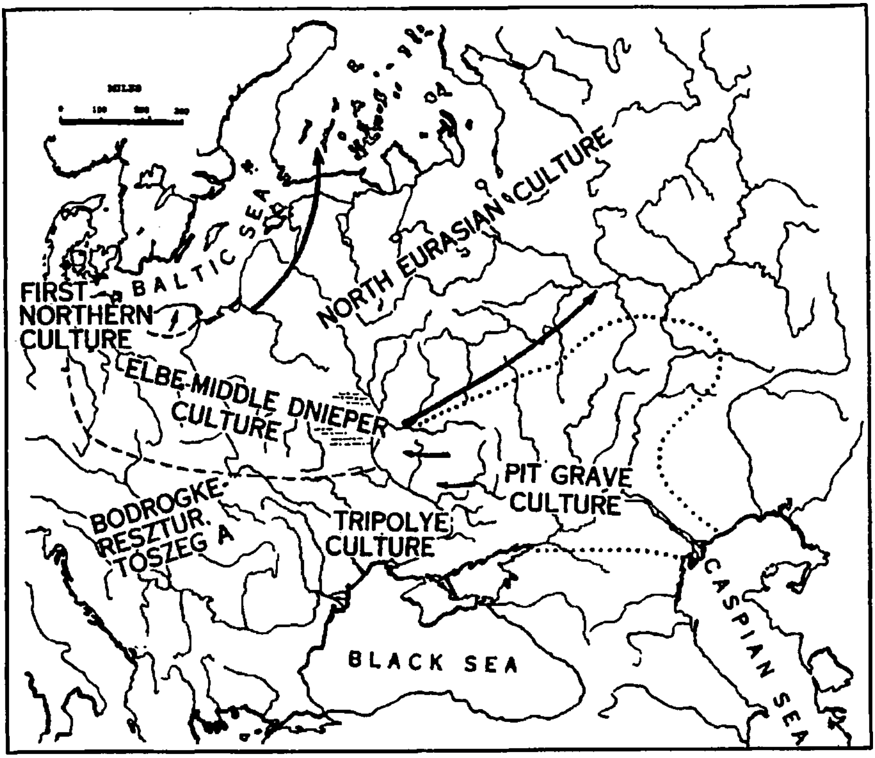
*This article was first published in 1952 and has been revised here by the author. It is reprinted by permission of the American Anthropological Association from *American Anthropologist* 54(4):602-611. It is not for further reproduction.

[1] The distinguished Danish linguist Holger Pedersen considers "Hittite" as an immediate member of the "Indo-European" family and not merely as an older relative – "aunt," as the American, E. H. Sturtevant, does.

This paper will analyze this hypothesis on the basis of archaeological data in hand that bear on some aspects of the problem of the origin of the north European branch of "Indo-European."



Map 1: East European cultures in the 5th millennium BC

The archaeologically known cultures of the Neolithic or the Bronze Age period which continue into later periods and are proved by written sources to have been associated with a certain ethnic unit and a certain language, yield essential chronological evidence, since linguistics alone cannot establish either relative or absolute chronology of the cultural development of "Indo-European" speakers. The discussion that follows concerns in particular one statement which requires reexamination in terms of archaeology:

> The group left in Southern Russia – the speakers of north European – maintained linguistic unity until after 1000 B.C. Then a separation took place, the Germanic speakers going off, possibly not all at once, between 800 and 500 B.C. The North European common speech is thus postulated as having lasted 700 to 1000 years. Balto-Slavic remained after the departure of Germanic, and by the beginning of the Christian era Baltic

> went off to the north, leaving the Slavic speakers as the last possessors of the old territory (Trager and Smith 1950:63).

This statement raises at least two questions: 1) Was South Russia the homeland of the north "Indo-Europeans"? and 2) Do we have a Balto-Slavic group of "Indo-European" speakers or separate Baltic and Slavic cultures?

The Cultures in South Russia and the Mother Culture of the North Indo-Europeans

It has become almost a tradition to look for unknown origins in the "mysterious" steppes of south Russia. What does the archaeological material contribute to this problem?

The cultures in south Russia of the 5th millennium BC[2] are mother cultures of all later cultures which are attributed to the speakers of south, west, and north "Indo-European." The so-called culture of the "Pit graves"[3] of the beginning of the 5th millennium BC, and the later cultures of the "Catacomb-graves" and the "Timber-graves" of the middle and the end of the 2nd millennium BC, to the north of the Caucasus and the Black Sea, have shown evidence of local development and of belonging in later periods to the Indo-Iranian speaking group (Ebert 1921; Tallgren 1925, 1926; Borkovskii 1930; Krivtsova-Grakova 1938; Passek 1941, 1945) (see Maps 1 and 2). The south Russian cultures of the 5th millennium BC were in close contact with the cultures to the east and southeast. The people of the "Pit graves" were hunters and sheep breeders, not farmers as their western and southern neighbors, and their culture resembled the contemporary cultures to the east of the Volga, in west Asia (Kiselev 1949). There is no archaeological support for the assumption that the culture of the "Pit graves" has been a very expansive culture which brought the so-called "Corded ware and battle-axe culture" to northern Europe, as it was thought some time ago (Ebert 1921; Rosenberg 1931; Borkovskii 1930; Sulimirski 1933 a.o.).[4] It expanded only westward at the expense of the Tripolye and the Elbe-Middle Dnieper cultures and most probably caused the rapid expansion of the eastern central European people to the northeastern forest zone (see Map 1). The culture of the "Catacomb-graves" was related to the "Kuban" culture in the northern Caucasus and had influence to the west as far as southwestern Poland. Contact is traced between the "Catacomb-graves" and the culture of the east Baltic-central Russian area. During the 1st millennium BC and the first four centuries AD, the culture of Iranian Scythians is known from archaeological and historical sources in south Russian territory.

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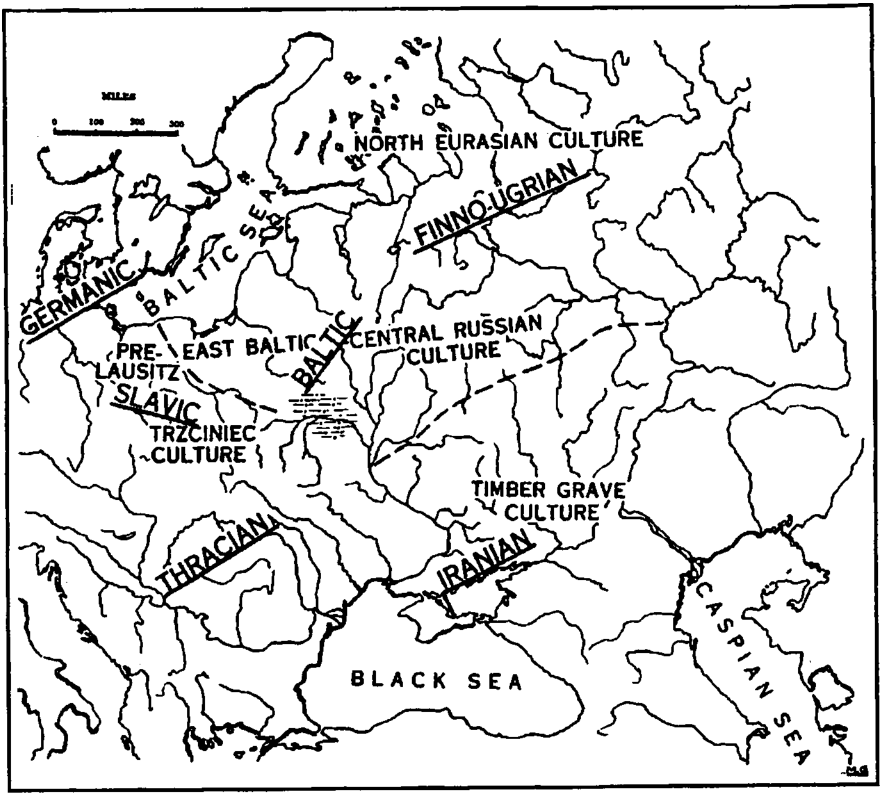
[2] The dates in this article were revised by the author. Also see Editors' Forward [Eds.].

[3] The "Pit grave" people are referred to by the Russian name "Yamna" in later articles [Eds.].

[4] The original article only listed the works of these authors in general. We suggest these works, which were available in 1952, to the reader [Eds.].

In the same territory, river names of Iranian origin are found (Rostovtzeff 1922; Vasmer 1923; Artamonov 1950).

In central Europe – to the west of the south Russian cultures – contemporary cultures are known, each having its own development and contact with the steppe cultures. The Globular Amphora culture of the Elbe-Middle Dnieper area (see Map 1) expanded to the east Baltic area and Belo and central Russia in the beginning of the 2nd millennium BC (see Map 2) and has its continuation in later periods. Archaeological material, confirmed by linguistic data (river names and Baltic loan-words in the Finno-Ugrian languages), provides a basis for the assumption that the "East Baltic-Central Russian Area" culture was evidently a Pre-Baltic culture (Gimbutas 1952) (see Map 2). After the formalization in the territory of the former north Eurasian sub-neolithic culture, the presumably Pre-Baltic culture had its continuation in the area



Map 2: East European cultures in the second half of the 2nd millennium BC and localization of the Indo-European groups, based on linguistic and historic sources or cultural continuation.

between the Vistula river in the west, the Daugava river in the north, the Upper Volga in the east, and the Pripyat swamps in the south throughout the 1st millennium BC and up to the 6th century AD (*Ibid.*).

The homelands of the Slavs are identified by the majority of Polish prehistorians with the so-called "Lusatian" (Lausitz) culture of the Bronze Age (Kostrzewski 1939-1948; Kozłowski 1939; Sulimirski 1937; Jażdżewski 1948; Lehr-Spławiński 1946; a.o.).[5] The Lusatian culture spread over the area of two earlier cultures: 1) the "Pre-Lusatian" (*c.* 1300-1050 BC),[6] which covered the Oder basin, and its contemporary, 2) the "Trzciniec" culture in the regions of the Middle and Upper Vistula, the Upper Warta, along the rivers Narew and Bug and in Volhynia (Jażdżewski 1948) (see Map 2). The character of this culture makes it evident that it sprang from the fusion of the local culture and the southern influences. The "Lusatian" culture extended in the period *c.*1050-900 BC through Pomerania, the southeastern part of Mecklenburg, nearly all Brandenburg, the eastern part of Saxony, northeastern Bohemia, northeastern Moravia, northwestern Slovakia, and further through Silesia, Poland, and Masovia up to the Vistula. In later periods, the culture held to be Slavic achieved a tremendous expansion to the east, southeast, and north. It reached the Iranian Scythians in the Middle Dnieper region at about the 7th century BC. Slavic expansion eastward went on throughout the Hallstatt period. At first they occupied western Volhynia and the region of Kiev. The so-called "Wysocko culture," considered as a Slavic culture, and the older local Volhynian cultures testify to a fusion of the Slavic population with the Thracians and show contact with the Scythians (Sulimirski 1931, 1937, 1939-40; Jażdżewski 1948:46, map 3). In the first centuries AD the Slavic tribes "Sclaveni" and "Antes" are known in south Russia from early historic sources.

Consequently, the hypothesis of north "Indo-European" linguistic unity existing in south Russia until after 1000 BC is far from acceptable. South Russia can be only a part of the "Indo-European" homeland. The steppe cultures of the 2nd millennium BC have to be considered as the cultures of already differentiated "Indo-Europeans."

Archaeologists were not able to establish a certain uniform culture of the "Indo-European mother culture" in the south Russian steppe zone, from which all the "Indo-European" nations dispersed. It is also absurd to restrict the original "Indo-European" habitat to a small area of northern Europe, like Saxo-Thuringia or Jutland, as some German, Swedish, and Polish archaeologists have attempted to do (Kossinna 1921, 1925; Åberg 1930-35, 1936; Antoniewicz 1936; Seger 1936; a.o.).[7] The Thuringian "Corded pottery" culture of the beginning of the 2nd millennium BC was held to be the original "Indo-

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[5] See footnote 4.

[6] The original article used the convention ± 1300-1050 BC. Because ± subsequently came to be used for radiocarbon dates, which did not exist in 1952, we have changed the ± in this article to *c.* in order to avoid confusion [Eds.].

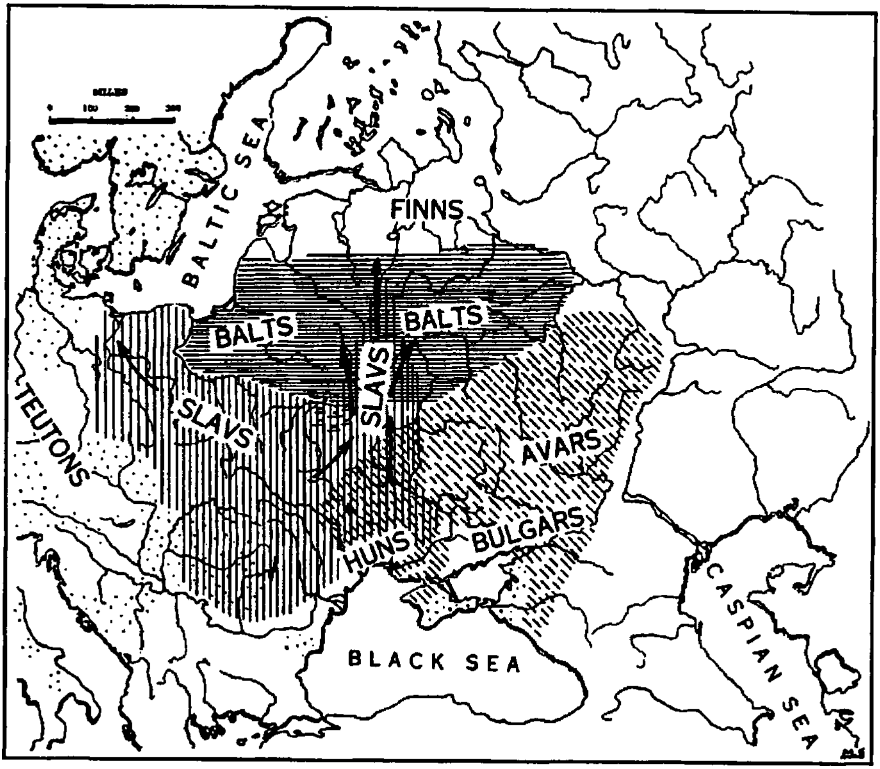
[7] See footnote 4.

European" culture, which expanded at about 1800 BC, carrying the corded ware and the battle axes. The fact that pottery ornamentation by cord impression and the battle axes were widely known from Greece and Anatolia in the southeast through all of central Europe, to cultures which did not form a uniform culture at that time, was overlooked. The "Corded pottery" culture of Thuringia was only a part of the mosaic of the different cultures in central Europe. The Saxo-Thuringian culture did not introduce the method of cord impression. The cord ornament was known in the end of the 3rd millennium BC in Greece, Bulgaria, Bohemia, and in northern Europe from Veselinovo, Late Stroked Pottery, First Northern, and North Eurasian cultures. Cord impressions were applied on some pots of the Globular Amphora culture of *c.* 2000-1900 BC. In central Europe this technique took root gradually. The so-called "corded pottery" actually belongs to a pottery style showing the continuing forms of the Globular Amphora culture in eastern central Europe, as well as of the other cultures in central Germany.

A hypothetical undivided "Indo-European" mother culture existing in the 2nd millennium BC in central or northern Europe is impossible. Did a uniform culture exist in the 4th millennium BC?

The philological evidence, based on the vocabulary common to all branches of "Indo-European" speech, shows that the "Indo-Europeans" tilled (**arō*) the land, sowed (**sējō*) their seed (**sēmō*), and reaped (**kerpō*) their harvests; they reared cattle (**gwōws*), sheep (**owis*), the pig (**sūs*), the goat (**aiĝ*). The main surviving names of the common speech point to a neolithic stage of development; no certain word for any metal survived. The linguistic data rather coincide with the archaeological material of the "Danubian I" economy, based on the cultivation of barley, emmer wheat, beans, peas, lentils, and flax. Bones of sheep, oxen, and pigs were found in the settlements. The agricultural and cattle-breeding "Danubian I" culture was spread all over the loess lands from Hungary to north Germany, and from Galicia to Belgium, reaching in the north the middle courses of the Rhine, the Elbe, the Oder, and the Vistula. The central European culture was quite uniform in the period up to *c.* 2500 BC (Buttler 1938:pl. 13). The documents of Boghazköy, Anatolia, prove that in the 3rd millennium BC there existed already a separate "Indo-European" language, called Luwian, more ancient than the Hittite. It is supposed that the "Indo-Europeans" reached Anatolia from the west through channels and islands of the Aegean Sea in the beginning of the 3rd millennium BC (Bittel 1945:42-45). The origin of the "Danubian" culture is still not very clear. By most authorities a southern or Anatolian origin is admitted, based mainly on pottery origins (Childe 1947:101).

At the close of the 3rd millennium BC, the central European "Danubian" culture was split into several different cultural units. Around 2000-1800 BC differentiation and expansion of the central European cultures increased. The archaeological material pictures a period of mutation: new forms, new styles



Map 3: The northward expansion of the Slavs around the 6th century AD.

originated, but the connecting links between the new cultures with the "Late Danubian" culture remained.[8] Owing to the rapid alternation of cultures, the whole of central and north Europe seems a welter of confusion, and the impression that we get is that great migrations were taking place. The natural increase of an agricultural population evoked its claims: more land was in demand. As far as we can deduce from the archaeological remains, the main causes of the culture change around 1800 BC were the adoption of a food-producing economy in the Pontic region and the distribution of the Bell Beaker folk of west European origin, who travelled across central Europe and reached the southeastern Baltic and the Middle Dnieper in the east, trading in copper, amber, and other materials, everywhere influencing the local pottery style. Seeking fresh lands, Pontic peasants intruded into western Ukraine and the loess lands of south Poland.

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[8] The cultural groups in Saxony and Thuringia, called "Walternienburg-Bernburg," and in the Upper Elbe-Middle Dnieper area, called "Globular Amphora culture," have preserved the features of the "Late Danubian" Tisza (Theiss) and stroke-ornamented pottery (see Böhm 1942). In the light of investigations in Hungary, it becomes clear that the culture of Thracians of the Bronze Age is autochthonous and is a continuation of earlier cultures belonging to the "Danubian" circle. (See Tompa 1938:90, 100, 109ff.)

The expansion of the north "Indo-Europeans" from east central Europe to north and northeast Europe at the expense of the First Northern peasant culture and the North Eurasian hunter-fisher culture is perceptible in the 5th millennium (see Map 1). The burial rites in the form of separate graves with contracted skeletons are the most indicative components of the central European expanding cultures, pointing out the genetic links with the North Pontic. The main pottery forms and the method of ornamentation prove also the sequence of east central European forms (Tallgren 1924; Gaerte 1927; Äyräpää (Europeus) 1933; Forssander 1933; Glob 1945). During the Bronze Age, toward the end of the 2nd millennium, the cultures held to be Germanic, Slavic, and Baltic developed into entirely different entities, as the Northern Area, the Lausitz, and the east Baltic Bronze Age cultures demonstrate. The continuity of these cultures into later periods is satisfactorily elaborated by archaeological, linguistic, and historic means.

Balto-Slavic Culture or Baltic and Slavic Cultures?

Until recently, it was generally believed that at one time the Baltic and Slavic languages had formed a unity of undivided speech within the "Indo-European" family.

There is no archaeological support for assuming a common Balto-Slavic period during the Bronze and Iron Ages, *i.e.* from *c.* 1700 BC up to the historic period. A Baltic culture is known in east Prussia, Lithuania, Latvia, and in prehistoric times also in Belo and western central Russia. The Slavic expansion from the southwest and south into Russian territory of today around the 6th and later centuries AD caused the extinction of the eastern Balts (see Map 3). Up to the 12th century AD there was still known in central Russia, on the river Porotva near Moscow, a living Baltic tribe of *Galindians.*[9] The river names of Baltic origin (Būga 1923, 1924; Vasmer 1932) and the Baltic loan-words in the west- and east-Finno-Ugrian languages are of early date; a part of them belong to the undifferentiated Baltic language (Thomsen 1890-1893; Būga 1924, 1925: see introduction).

Balts and Slavs as separate "Indo-European" groups were neighbors for very long periods. After the 6th century AD, the Slavs surrounded the Baltic territory from the west, the south, and the east. The existence of one Balto-Slavic group cannot be established as true back to the beginning of the 4th millennium BC. We can only guess that in the period before the north "Indo-European" expansion the Baltic and the Slavic tongues could have been very closely related dialects. The linguistic connections between Baltic and Slavic are numerous, but there also exist certain old grammatical dissimilarities.[10] On the basis of the archaeological material, the Elbe-Middle Dnieper culture of the beginning of the 4th millennium was the mother culture of the east Baltic-western central Russian culture and of the Trzciniec culture in Poland and western Ukraine, which was the main component of the later Lausitz culture.

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[9] Mentioned by Russian chronicles of Hypatius and Laurentius of the 11th and the 12th centuries.

On account of the archaeological and linguistic data we suggest the usage of separate terms for the Baltic and the Slavic group, but not Balto-Slavic, for this early period. The statement that the Balto-Slavic group remained in south Russia after the departure of the Germanic at about 500 BC and that by the beginning of the Christian era the Baltic went off to the north, leaving the Slavic speakers as the last possessors of the territory (Trager and Smith 1950:63) – is not confirmed by archaeological and linguistic evidence.

Linguistic differentiation must be considered as dependent on historical events. Every language and every culture is repeatedly faced with new situations, continually differentiating in an arhythmic way. It is almost impossible to represent diagrammatically the "Indo-European family tree," periodically disseminating its offshoots. Our history has also certain periods of intensiveness. The migrations and mixtures with other linguistic groups caused the cultural mutation and separation of linguistic units in a quicker and more concentrated rhythm. As far as we know, the differentiation of the "Indo-European" speakers was taking place as early as the 3rd millennium. The diagram of north "Indo-European" differentiation should be closed with the first half of the 2nd millennium BC. In the first millennium BC, the separate groups assumed to be Germanic, Slavic, and Baltic were already differentiated into smaller cultural units.

The "Indo-European" speaking nations, after more than a hundred years of research work, are still in need of detailed elaboration and cooperation on archaeological, ethnological, and linguistic sources.

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[10] Phonetic, morphological, and lexical differences between the two groups have been pointed out by the French scholar Meillet 1908:40-48, and others: Endzelins 1922; Būga 1925; Pisani 1932; Salys 1937; Senn 1941; a.o.

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The Indo-Europeans: Archeological Problems[*]

A New Book On The Indo-Europeans, Archaeological Problems[1]

For some time archaeologists shunned expressing their opinions on the homeland area of the Indo-European peoples, their early migrations and further developments. It was felt, and rightly, that much excavation work and much preparation in detail had still to be done and that the stage of archaeological research was not yet ripe for general conclusions. However, there appeared in Paris in 1961 a book by P. Bosch-Gimpera entitled *Les Indo-Européens, problèmes archéologiques,* which was a French translation by R. Lantier from the Spanish, published in Mexico several years earlier. The book has 283 pages and ten maps. It covers not merely the origin problem, but pursues the Indo-European story up to the Roman times. It is a survey of much that had been said by linguists and archaeologists in the course of about 60 years on the Indo-European "mother tongue," language relationships, homelands, development, and migrations of separate Indo-European groups – a survey of remarkable fluency. The book is not a precise account of archaeological developments, but rather a summing up of many hypotheses. It certainly will stir archaeologists and linguists and will give a new stimulus to reexamine the aging Indo-European homeland problem. In this lies its value.

Bosch-Gimpera's general conclusions on the birth, homelands, and early development of the Indo-European cultures are as follows:

(1) The embryo of the Indo-Europeans lies in Mesolithic Europe; languages in the Mesolithic period must have formed a general substratum giving birth to the Indo-European, the Finno-Ugrian, the Rhaetian, and Basque linguistic families. (2) The formation of several Indo-European groups occurred in the early Neolithic, reaching back to the 5th millennium. These are manifested by the birth of the linear Danubian culture and by another culture located between Poland and the Black Sea. (The author probably has in mind the North Pontic Neolithic culture and assumes its westward spread over Poland, which is not established in archaeology.) (3) In the 3rd millennium the process of crystallization of the Danubian culture reached a stage of maturity. The author sees "Danubian infiltration" in the Balkans and in the Apennine

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[*] This article was first published in August 1963 and has been revised here by the author. It is reprinted by permission of the American Anthropological Association from *American Anthropologist* 65(4):815-836. It is not for further reproduction.

[1] The present article was primarily meant to be a review of *Les Indo-Européens* by P. Bosch-Gimpera following the invitation of the book review editor of the *American Anthropologist.*

Peninsula. With the Danubian or other movements are to be connected the appearance of early Greeks in Greece, and of Luwians and Hittites in Anatolia. (4) The Funnel-necked Beaker culture of the 3rd millennium in northern Europe between Denmark and Poland must also have been Indo-European. (5) The Ponto-Caucasian group of the 3rd and 2nd millennia formed an early Indo-Iranian bloc, part of which spread to the Near East. Its northern branch, the people of the Pontic steppes, spread westward, infiltrated central Europe, and gave rise to new temporary formations (the Globular Amphora and Corded-Battle-Axe cultures) by mixing with the Indo-European peoples of central Europe and with non-Indo-Europeans in Russia. The Indo-Iranian "vagabonds" caused the disintegration of many European cultures, except for the Tripolye which persisted for a long period. The first centuries of the 2nd millennium comprised a period of "reorganization" and further formations of the Eneolithic (Chalcolithic) entities. (6) During the Early Bronze Age of Europe there were several centuries of stabilization and consolidation. Many Bronze Age groups were already localized, and these can be identified with some of the Indo-European linguistic groups, such as the Achaeans in Greece, Thraco-Phrygians in the eastern Balkans, Germanic people in northern Germany and southern Scandinavia, and Balts on the eastern Baltic shores. In central Europe the Early Bronze Age Únětice culture appeared, and in the Middle Bronze was replaced by the Tumulus culture, presumed to represent a Proto-Celtic group. The Late Bronze Age Lusatian (Lausitz) culture was to become a Venetic or early Slav culture. Another group in Slavonia stemmed from the Eneolithic Vučedol and Neolithic Butmir cultures, but it is as yet difficult to identify it with the historic Illyrians. In Hungary was distributed the Tószeg culture, continuing the Danubian traditions which probably can be connected with the ancient Dacians. From the mixture of the steppe elements and the Tripolye (which is also counted as "Danubian") arose the Catacomb-grave culture. In the western Pontic area another culture was born, that of the early Cimmerians, and east of it the Timber-grave culture, in which the roots of the Scythians can be recognized. In the Caucasus there already were differentiated Iranians, and from there the Kassites and Mitanni migrated to Mesopotamia, while the Hindu via Azerbaijan and western Persia migrated to present India. (7) Linguistic evolution during the Bronze Age remained still in a "fluid state," and only after the Late Bronze Age movements did a period of "definitive development and of final linguistic crystallization" begin.

As of the time that Indo-European peoples appear in the historic records at the beginning of the 2nd millennium BC, they were already differentiated. Hittites are, for instance, a separate Indo-European group. Therefore it is logical to presume long-time Indo-European developments before the 2nd millennium, as Bosch-Gimpera rightly does. He goes back as far as possible – to the Mesolithic, but does not positively identify any of the European Mesolithic cultures as the Indo-European cradle. The first signs of the existence of several Indo-European groups, according to Bosch-Gimpera, are manifested in the emergence of the Neolithic Danubian culture, a "Polish-Pontic" culture, followed later by their satellites, the Funnel-necked Beaker culture and the Ponto-Caucasian culture. In other words, the homelands of the Indo-European peoples lie in Europe. The area of western and Mediterranean Europe is excluded and so is the Balkan Peninsula (except the northern branch of the Painted Pottery culture, the Tripolye, which for unexplained reasons is linked with the Danubian). What was east of the lower Volga has not attracted the author's attention. Western Siberia and Central Asia are not included in the maps.

There are several general and universally accepted linguistic premises: first, the original location of the early Indo-Europeans before their dispersal had to be in the vicinity of the Finno-Ugrian, the Caucasian, and the Semitic linguistic families; second, the marginal Indo-European languages in the east, the Tocharian in Chinese Turkestan and the Old Indic (Sanskrit) in northwestern India, are closely related to the Baltic and Slavic on the one hand, and to the Greek, Thraco-Phrygian, and Armenian on the other. The Hittite is also related to the above, but not as closely, and it shows a more simple construction and a closeness to the Finno-Ugrian. It is accepted that such peculiar linguistic similarities point to a more compact area for the early Indo-European homelands before their wide dispersion. A large area of the early Indo-European distribution, including northern, central, and Pontic Europe, as envisaged by Bosch-Gimpera, does not quite agree with established linguistic evidence. Can all of the diverse Neolithic cultures – the Danubian, Funnel-necked Beaker, Painted Pottery (Tripolye), and North Pontic – claim an Indo-European origin?

In order to reconcile the problem of Tocharian relationships with the Indo-European languages in Europe, the author has placed Tocharians north of the Carpathians in Volynia on the Bronze Age map. There is no evidence, archaeological or linguistic, to prove the existence of Tocharians north of the Carpathians, which is the area where most ancient Slavic toponymy is found and where I find a gradual cultural development throughout the Bronze Age (the Bilopotok, Komarov, Vysockoe, Bilogrudovka, Chernolesska assemblages) and later periods to the beginning of the Slavic expansions. The migration of the Tocharians from central Europe to the borders of China seems to be incredible. How could the Tocharians have spread from central Europe to Chinese Turkestan if there are no traces of west-east movement, either in the Bronze or in the Iron Age? The Bronze Age of the Tocharian area is not yet known, and it is much too early to make any guesses. The point of origin for the Old Indic people is, according to Bosch-Gimpera, the Caucasus, which also thus far has no archaeological support. Much more probable are migrations of the so-called Tazabag'jab Bronze Age culture, kin to the Proto-Scythian Andronovo and Timber-grave culture of the Eurasian steppes, from south of the Sea of Aral up the Syr-Daria River around the 15-14th centuries BC, the date which agrees with that of the destruction of the walled cities of the pre-Aryan Indus civilization (see Map 5). That the Timber-grave-Andronovo-Tazabag'jab bloc belonged to the Indo-Iranian speaking peoples is well established by later developments of this culture. The question of the homelands of the Indo-Iranian bloc and of the Tocharians is not of minor importance for the solution of the early distribution of the Indo-European speakers. It alone raises serious doubts about the strength of the European theory.

Europe Or Asia?

Archaeological finds continue to confirm a vigorous east-west flow of the cultural elements from the Eurasiatic steppes in the second half of the 5th millennium.[2] The long-lasting Neolithic and Chalcolithic cultures of Europe and Early Bronze Age cultures of Asia Minor were greatly disturbed. Since that time many of the old cultures show no further continuity; they slowly disintegrated or degenerated. A process began of hybridization of different cultural elements and a complete reorganization of the old cultural pattern. The change was so thorough that it cannot be explained by local cultural mutations (Gimbutas 1956). Were the intruders "a northern branch of the Indo-Iranian people," who while spreading westward merely disturbed other Indo-Europeans in central and northern Europe, as Bosch-Gimpera assumes? Or were they representations of Indo-European culture or cultures preceding the period of increased differentiation caused by the enormous expansion? In the answer to these questions lies one of the basic clues for the understanding of the Indo-European culture before its dispersion to Europe and Asia Minor.

In recent decades many new excavations have been made in the Ukraine and beyond the Caspian Sea which have brought much new light for the clarification of cultural developments north of the Black Sea, north of the Caucasus mountains, in Transcaucasia, in the lower Volga area, and beyond the Caspian Sea, and for the dating of the earliest sites of the eastern invaders in the Balkans. What was the "Ponto-Caucasian" or "Pontic steppe" culture and what lay to the east of it? To this question I wish to add here a few sentences, since the picture of the cultural groups north of the Black Sea and around the Caspian and Aral Seas is constantly changing due to new finds, and the old labels need a thorough reexamination.

North of the Black Sea, south of the Caucasus range, and around the Caspian and Aral Seas, in the 5th millennium and before the expansion to Europe and the Near East, there were several cultures (Map 1).

The North Pontic or Mariupol Culture

The North Pontic culture was in the eastern Ukraine, in the basins of the lower Dnieper, Don, and Donets Rivers, and in the Crimea, known now from about 150 sites (Telegin 1961). Its distribution in the north and northeast reached the middle Dnieper and eastern Volynia, but not Poland.

Stone industry, burial rites, and physical type of the people (massive East European, Crô-Magnon type) show that this culture continued in this area throughout the Mesolithic, Early Neolithic (Sub-Neolithic), Neolithic, and

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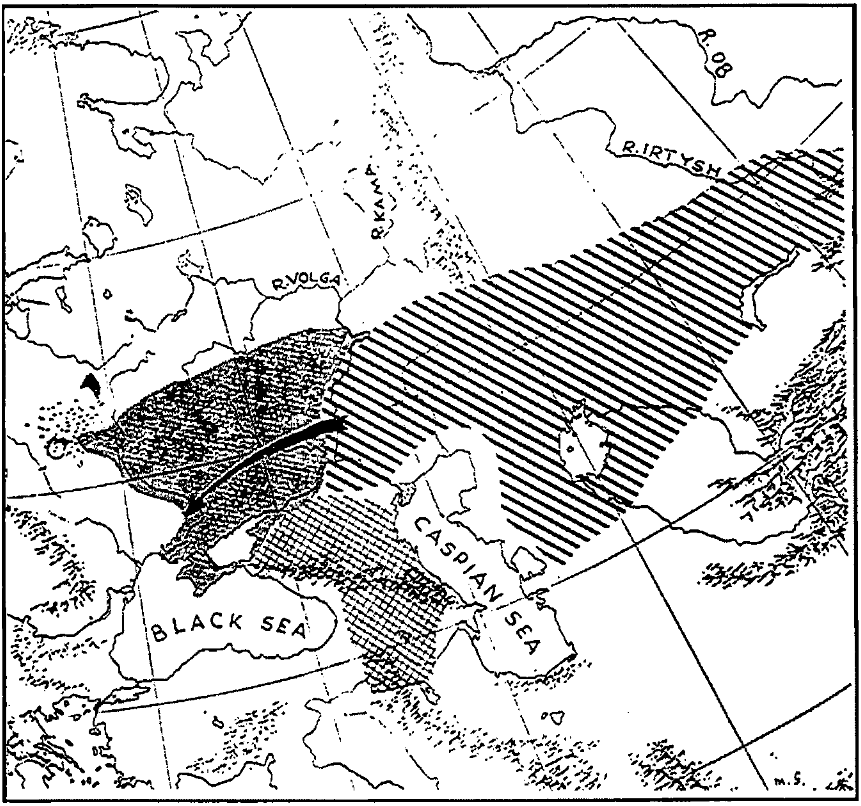
[2] The dates in this article were revised by the author [Eds.].



▨ 1. North Pontic or Mariupol culture

▦ 2. Transcaucasian Copper Age culture invaded by the Kurgan people in the 5th millennium BC

▧ 3. Kurgan culture in the lower Volga and Kazakhstan (in the east to the upper Yenisei; Afanas'jevo culture not shown on the map); *arrow:* expansion *c.* 4400-4300 BC (or before) to the North Pontic area.

Map 1: Map of the Eurasian Steppe and Caucasian cultures of the 5th-3rd millennia BC

Chalcolithic periods, and that possibly these people were descendants of the East European Upper Palaeolithic culture. I call this the "North Pontic Neolithic and Chalcolithic" culture. The largest and richest cemetery dating from the middle of the 5th millennium is Mariupol, north of the Sea of Azov. Its distinctive features were: collective graves in long trenches; burial of the dead in an extended position in deposits of bright red ochre; pointed and flat-based pottery, a bulging vessel type having a broad rim, decorated predominantly with incised or stamped horizontal lines or diagonal lines in a herringbone pattern solidly covering the whole pot; a variety of polished stone tools; typical ornaments such as rectangular laminae of bone sewn on clothes, boar's tusk necklaces, beads of elk teeth, shells, and carnelian, copper bracelets and rings (in the latest phase), and pieces of rock crystal. The latter show trade contacts with the Caucasus. The people lived on low river banks, particularly on islands and peninsulas, and raised cattle, pigs, goats, and dogs. The presence of vehicles and the horse has not been evidenced. Large cemeteries indicate permanently settled communities.

Transcaucasian Copper Age Culture

Recently a new culture has been brought to light between the Caucasus range in the north, Lake Van and the upper reaches of the Euphrates in the south, eastern Anatolia in the west, and the upper Araxes in the east. In Russian it is called "Eneolithic culture of Transcaucasia" (Munchaev 1961; Piotrovsky 1962) and in eastern Anatolia, "Chalcolithic and Early Bronze Age culture of eastern Anatolia" (Burney 1958). Since metallurgy is attested by the presence of stone molds for copper axes, I prefer to call it the "Transcaucasian Copper Age culture." Two carbon-14 dates were obtained from its earlier phases indicating the first quarter of the 3rd millennium b.c. The bulk of material comes from tell and hilltop settlements in Armenia, Azerbaijan, and Georgia. Villages were of rectangular and round houses with mud-brick walls. Among the remains of domestic animals were those of cattle, sheep, goats, dogs, and horses. Settlements were of a primitive agricultural-pastoral type, with stock-breeding rather than agriculture receiving intensive development in the later phases. Clay figurines of oxen, rams, barking dogs, and horses appear in abundance. Some models of oxen have small hollows in the forepart of the trunk which makes it possible to suppose that were set to vehicles, of which clay wheels with projecting hubs have remained. There were also highly conventionalized female figurines. Among the finds were shaft-hole hammers ("battle-axes") and pear-shaped sceptre-heads of polished stone. Pottery was unpainted, embossed or grooved with curvilinear or rectilinear patterns in the early phase and incised with geometric patterns in the later phase, contrasting sharply from painted pottery of northern Mesopotamia. Shapes were oval or globular, some with cylindrical necks. Cemeteries are not known, but finds of similar nature from a site at Lake Van are said to come from stone cist graves.

The Kurgan Culture in the Eurasian Steppes from the Lower Volga to the Upper Yenisei

A third group was in the lower Volga area, around the Sea of Aral, in Uzbekistan, and in Kazakhstan to the Altai mountains. Dune sites along the banks of rivers show that a microlithic flint industry continued around the Sea of Aral and north of the Caspian Sea for probably at least several millennia, showing that hunting was the main occupation (Formozov 1961). Information is still lacking about stock breeding and agriculture in the earlier phases of this culture, *i.e.*, in the 4th and early 3rd millennia. This is the area where horse-breeding must have first occurred. Pottery appeared south of the Sea of Aral not later than in the 4th millennium and gradually spread northward. The earliest type is closely related to that of northern Iran (Vinogradov 1957). Pots in the lower Volga area, western Kazakhstan and Khorezm were of truncated egg-shape, with round bases, decorated with incisions and dentate stamp impressions, usually forming wavy lines and herringbone patterns. This form remained typical throughout the 3rd millennium. The earliest graves in the lower Volga area were single graves in deep pits which contained the dead lying on the back with legs contracted upward; the skeletons were sprinkled with ochre and covered with earthen barrows. I call this the "Eurasian Kurgan culture" (from the Russian word *kurgan,* "barrow"); the construction of an earthen barrow is one of the most distinctive features of this culture and is in marked contrast to the North Pontic culture. Three to four chronological phases of the Kurgan culture within the span of the 5th millennium have been established by now (Merpert 1961; Gimbutas 1961). The Kurgan people were long headed and tall statured, and were more gracile and had considerably narrower faces than the massive East European North Pontic Crô-Magnon people. Physically the Kurgan people (Crô-Magnon type with narrow faces) in the lower Volga area, in Kazakhstan and to the steppes of Minusinsk in the east were of the same type (Debets 1948; Ginsburg 1956). To the east, the Kurgan culture has relatives as far as the upper Yenisei, north of the Altai mountains; this is known as "Pre-Afanasjevo" and "Afanasjevo" culture, dating from the second half or the end of the 4th and the beginning of the 3rd millennium (Kiselev 1951). How deep the "Afanasjevo" roots are in the heart of Asia is not yet known. One fact can be stated, however; the Kurgan culture, already divided into several variants, occupied an enormous area of the Eurasian steppes.

The Expansion of the Kurgan People

To the North Pontic Steppes, Northern Caucasus and Further South

Soon after the middle of the 5th millennium Kurgan sites appeared north of the Black Sea. The early sites in the lower Dnieper area can be dated approximately to *c.* 4400-4300 on the basis of typological comparisons with eastern central Europe (Gimbutas 1961). The local North Pontic culture disintegrated; the Kurgan culture became entirely dominant, although many elements were taken over from the local North Pontic (Mariupol) culture. This is the area where an abrupt change of culture has been well observed (Gimbutas 1956, 1961; Danilenko 1959). New people of a more gracile type than the Pontic Crô-Magnons came in introducing different burial rites (single burial in a contracted position in pits under barrows surrounded by stone rings and marked by stone stelae) and a different settlement pattern (fortified hill-top villages). The presence of domesticated horses is evident in the earliest Kurgan sites in the lower Dnieper area (Danilenko 1959) and from the subsequent phases the presence of vehicles is shown by the remains of solid wooden wheels and other parts of carts in graves as well as by clay models representing two-wheeled carts.

The present archaeological data show that in the northern Pontic region remarkable changes occurred due to the intrusion of the Kurgan people from the east, and therefore the Pontic steppes cannot be regarded as the origin of impetus for the expansion to the Balkans, and to central and northern Europe. The whole process of east-west movements was a much more complicated one than has usually been perceived. The long-lasting North Pontic culture was the first victim of the invasion of the eastern steppe people.

The earliest phase of the Kurgan culture in the northern Caucasus is represented by the cemetery of Nal'chik on the upper Terek in central northern Caucasus (Kruglov, Piotrovsky, and Podgaetsky 1941). Burial rites were the same as in the earliest Kurgan cemeteries in the lower Dnieper area: the dead were laid on ochre deposits in single pits, on the back with legs sharply contracted upwards; the grave was covered with stones and an earthen barrow. Grave inventories included beads of shells, perforated elks' teeth, white paste, and carnelian which allows placing them in the same chronological group with the earliest Kurgan graves and the latest Mariupol graves north of the Black Sea. Sheep bones were predominant in graves. An engraving of a snake combined with a concentric circle (sun symbol?) appeared on a bone plate in Nal'chik – symbols that lived on for a long time in the Kurgan realm.

The Maikop period, dating from *c.* 2900 to *c.* 2600 BC, succeeds that of the Nal'chik, famous for its royal graves at Maikop and Tsarskaja in the R. Kuban basin. Barrow cemeteries including rich and poor graves and habitation sites on high river banks from this period have been discovered all over the northern Caucasus. This is the beginning of the north Caucasian Copper Age. Pot shapes and the stone industry definitively show very intimate relations with the Transcaucasian culture. It seems possible that the Kurgan people spread southward into the milieu of the Transcaucasian culture and borrowed many new cultural elements from it. It is very likely that the art of metallurgy, the acquaintance with vehicles, and the making of beautifully shaped "battle-axes" (hammer-axes) of semi-precious stone were acquired by the Kurgan people from the Transcaucasians (who, as Burney (1958) thinks, may well have been the Hurrians, whose existence in Akkadian times is attested by tablets in their language from the Khabur valley). Hammer-axes must have come ultimately from western Anatolia where their presence is evidenced in Troy I and II and in the tombs of Dorak near the Marmara coast (Lloyd 1961) in the first half and the middle of the 3rd millennium BC.

The royal tombs at Maikop and Tsarskaja in Kuban, with burials in house graves built of timber or of stone slabs equipped with a fantastic amount of gold, silver, copper, pottery and stone vases, gold figurines of bulls and lions sewn on garments, gold and silver bull figurines adorning canopies, gold rings, gold, silver, turquoise, and carnelian beads, as well as copper axes, daggers, and spearheads, show close relations with northern Iran (Tepe Hissar III) and with the royal tombs of Alaca Hüyük and Horoztepe in northern central Anatolia

(Lloyd 1961). The similarity between the Maikop and Alaca Hüyük and Horoztepe burials is so marked that it is very tempting to ascribe them to the predecessors of the historically known Hittites. House-like graves with timber roofing, "sun-disc" ornaments, stag and steer figurines which adorn canopies and biers, skulls and hooves of oxen laid on the sides of the grave, skeletons of oxen and dogs in the graves in Alaca Hüyük and Horoztepe, are conspicuously "Indo-European." The royal personages were buried with great pomp. The same elements in burial rites continued north of the Caucasus Mountains and the Black Sea during the Bronze Age in the royal tombs of the Proto-Scythian Timber-grave and Cimmerian cultures, in the earliest complex of eastern intruders into central Europe called Corded in the Early Bronze Age Únětice culture of central Europe and elsewhere.

The "Kurgan story" in the Caucasus leads one to draw the following inference: the kurgan people south of the Caucasus range seem not to have been indigenous. Before the efflorescence of the Maikop sort of culture *c.* 2900-2600 BC, the Kurgan groups must have crossed the Caucasus mountains and appeared in the milieu of the Transcaucasian, Near Eastern, and Anatolian cultures where they rapidly adapted themselves to the standards of a higher culture and civilized their own homelands in the northern Caucasus. The Hittites (or Proto-Hittites) very probably appeared in Anatolia before it came into the field of literacy after 2000 BC. Another group probably having its roots in the northern Caucasus is represented by Kassites in Luristan mentioned in Elamite texts in the late 3rd millennium BC. In the 2nd millennium BC, Kassites entered Babylonia and their secure hold over the Babylonians suggests that they were efficient rulers.

In the northern Caucasus, from the Maikop period onwards, the local Bronze Age culture went its own way. Its gradual development in the same area, the Crimea, and along the northern shores of the Black Sea to Odessa in the west, throughout the 2nd millennium BC and up to the end of the 8th century BC, links this cultural group with the historically known Cimmerians.

To West of the Black Sea, Western Anatolia, Central and Northern Europe

Around 4400-4200 BC, Kurgan elements (barrows, pit-graves with skeletons laying on the back with legs contracted upwards, ochre deposits, stone maceheads, curious horse-head figurines made of precious stone, battle-axes, unpainted incised and stamped or cord-impressed pottery, etc.) appeared in Transylvania, northern Yugoslavia, and northeastern Hungary, and along the western coasts of the Black Sea in the western Ukraine, Romania, and Bulgaria. The earliest finds of Kurgan appearance have proved to be contemporaneous with the Bodrogkeresztúr culture (the heir of the Tisza culture during the Copper Age of central Europe) in Hungary and western Romania (Kőszegi 1962), with the classical Tripolye culture in eastern Romania (Moldavia) and the western Ukraine, and with the last phase of the Gumelniţa and Salcuţa cultural groups in central and southern Romania and Bulgaria (Garašanin 1961; Gimbutas 1960; Georgiev 1960).

A later wave of southward expansion down the Balkan Peninsula is probably connected with the layers of destruction in Greece in the end of the Early Helladic III period, *c.* 2300-2200 BC, as shown by recent excavations at Lerna in the Argolid. In Lerna, the burning of the House of the Tiles marked the end of an era (Caskey 1960). Simultaneous changes are known in western Anatolia. In Troy, new elements appeared in the middle of the Troy II period, Troy IIc (in architecture a framework of wooden beams was introduced in the mudbrick construction), and about 2300 BC Troy was destroyed in a great conflagration. In central western Anatolia, in Beycesultan, the complete break of culture followed the destruction of Layer XIII, dated also at 2300. By 2200 BC, the new West Anatolian culture reached Polatli and the region of Kastamonu where the land of Pala is probably located. The appearance of the new culture in western Anatolia and its eastward movement must be connected with the Indo-European Luwians and Palaites. These first Indo-European settlers in western Anatolia were in relation with the early Indo-European wave in the Peloponnese and the Aegean area, as James Mellaart has presented in his article on "The End of the Early Bronze Age in Anatolia and the Aegean." The names ending in *-ss* and *-nd-* distributed in the Peloponnese, Crete, and western and southern Anatolia are assumed by Mellaart as an integral part of Indo-European Luwians and their pre-Greek Aegean relatives (Mellaart 1958).

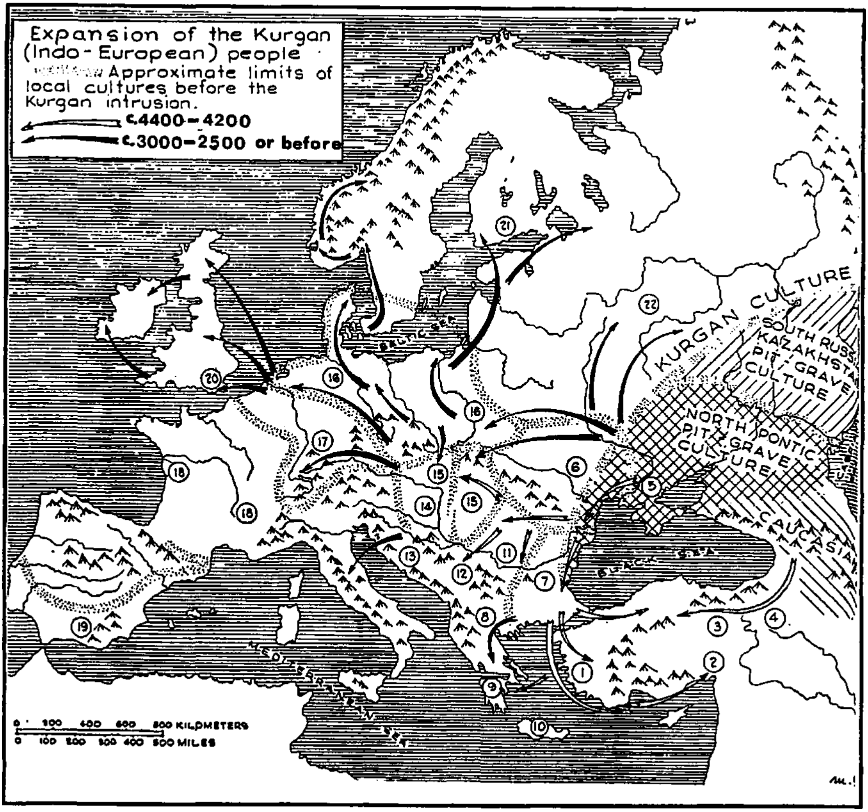
The movements of the Kurgan people across the Balkan Peninsula have become clear mostly through excavations made during the last decade. They very probably travelled also by sea, which explains the lack of destruction evidence at this period in mainland Greece. New finds considerably change the previous interpretations. The theory of a "Danubian" or eastern Balkan (Gumelniţa and Tripolye) dispersal to Greece and Anatolia has no archaeological support.

The Danubian (or Spiral-meander Pottery) culture, the early phases of which in central Europe have been placed by carbon-14 dating in the 5th millennium, is most likely an extension of the Starčevo culture, the earliest ceramic Neolithic culture in the middle of the Balkan Peninsula. Both the Starčevo and Danubian cultures are ultimately linked to the early agricultural cultures in the Near East and the eastern Mediterranean. Their basic character, particularly their habitation pattern (large villages consisting of long inhabited mound settlements in the Balkans), religion (the predominance of the mother-goddess cult), and social structure (large families living probably in a matriarchal system), has nothing in common with the mobile stock-breeding, patriarchal, and socially stratified Indo-European communities. When the Kurgan elements appeared in central Europe, the Danubian culture was already non-existent; in the Middle Danube basin it was superseded by the Lengyel group and in the Upper Danube area it was replaced by the Michelsberg group, which belongs to the northwestern European Funnel-necked Beaker bloc, in the early part of the 4th millennium BC. The farmers represented by Painted Pottery groups, Gumelniţa, and Tripolye, have definitively not expanded to Anatolia and Greece. During the final phases of their existence they were strongly influenced by the Aegean west Anatolian culture and disturbed by the Kurgan invasion. The floruit of the Painted Pottery culture in the Balkans came to an end. The change of the physical type in the eastern Balkans gives additional evidence for the coming of new people. In Romania, where many skull measurements have been done, it was shown that the Gumelniţa people and their possible predecessors on the Black Sea coast, the Hamangia people, were of proto-mediterranoid and mediterranoid type, dolichocephalic or mesocephalic, and with some, brachycephalic element. The Kurgan people were different, representing the "steppe" type, the gracile Crô-Magnoid (Necrasov 1961).

The intrusion of the Kurgan people to the Balkans gave rise to an entirely different pattern in cultural developments. In the course of several centuries the old eastern Balkan cultures came to an end; neither of the Painted Pottery groups continued. The ensuing social structure, economy, architecture, and burial rites were different. If some of the old elements persisted to the beginning of the 2nd millennium, they were doomed to degeneration. Only in the western half of the peninsula can the persistence of the local cultures be traced. Along the Middle Danube, in the valley of the lower Tisza River and in central Yugoslavia, the survivals of the Lengyel-Tisza-Vinča lived on throughout the Early Bronze Age, to the middle of the 2nd millennium BC.

The other routes of expansion were from the Pontic steppes up the Dnieper and Desna Rivers to central Russia (the appearance of the "Fat'janovo" culture) and to central Europe north of the Carpathian mountains and north of the Alps to the upper Rhine, from central Europe to northern Germany, Denmark, southern Sweden, and southern Norway, and northeastward along the East Baltic coasts to southern Finland in the north (the appearance of the "Battle-Axe" or "Corded" culture). This vigorous expansion to central and northern Europe resulted in a relatively rapid disintegration of the Funnel-necked Beaker culture, and disturbed the food-gathering East Baltic and central Russian Comb- and Pit-marked cultures. The thorough change, the "reorganization" of cultures in central and northern Europe, is so convincing that the incursion of the Indo-European speaking people has now become a universally acknowledged fact. Whether it started much before 2900, the present chronological means do not make clear. Carbon-14 dates for early corded beakers in the Netherlands and northwestern Germany cluster around 2500 BC (Van der Waals and Glasbergen 1955; Waterbolk 1960). The Kurgan elements are recognizable in the Globular Amphora complex (where they appear mixed with the Funnel-necked Beaker elements), which precedes the somewhat later "Corded" or "Battle-Axe" assemblages.

Approximate directions of Kurgan expansion are shown on Map 2. ("Kurgan" is used as a general name for expanding eastern elements, representing the Kurgan culture north of the Black Sea, already mixed with the local North Pontic and Caucasian elements. The labels "Corded," "Battle-Axe," and "Ochre-grave" are not sufficient and exact.)


Expansion of the Kurgan (Indo-European) people
Approximate limits of local cultures before the Kurgan intrusion.
c.4400-4200
c.3000-2500 or before
KURGAN CULTURE
SOUTH RUSS. KAZAKHSTAN PIT-GRAVE CULTURE
NORTH PONTIC PIT-GRAVE CULTURE
CAUCASIA
BALTIC SEA
BLACK SEA
MEDITERRANEAN SEA
1
2
3
4
5
6
7
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18
19
20
21
22
0 200 400 600 800 KILOMETERS
0 100 200 300 400 500 MILES

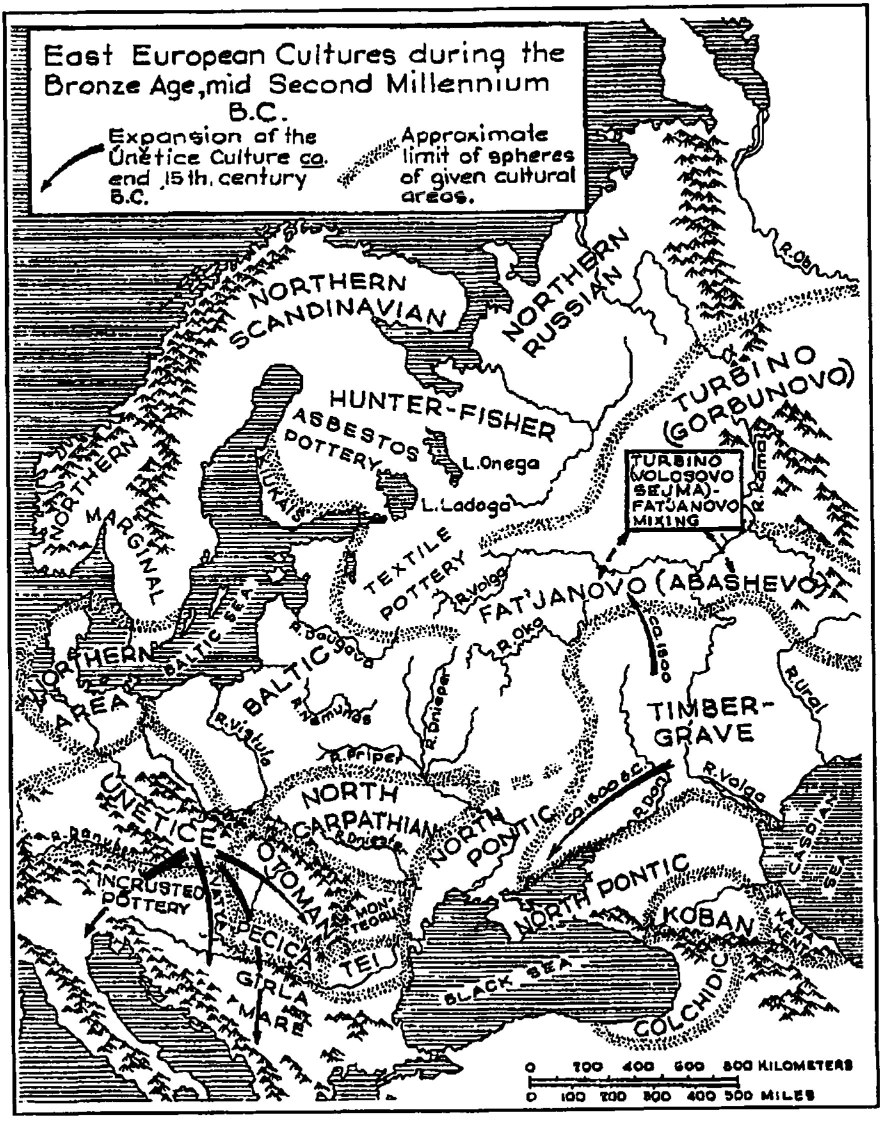
Map 2: Map of Expansion of the Kurgan (Indo-European) People

Key A: **European cultures in the 5th-4th millennium before the Kurgan expansion:**

1. Western Anatolia
2. Cilician Early Bronze Age
3. Central Anatolian Early Bronze Age
4. East Anatolian Early Bronze Age, related to the Caucasian
5. North Pontic Neolithic and Chalcolithic
6. Tripolye (Tripolye-Cucuteni-Eröd) First Northern
7. Gumelniţa
8. Early Macedonian Bronze Age
9. Early Helladic I and II
10. Early Minoan
11. Bubanj II-Salcuţa
12. Late Vinča
13. Butmir
14. Lwnfywl survivals
15. Tisza (Tizapolgár-Bodrogkerestúr and Baden
16. Funnel-necked Beaker (TRB)
17. Michelsberg, kin to 16
18. Chassey
19. Almérien and other Neolithic groups
20. Windmill-Hill
21. Comb-Marked Pottery
22. Pit-Marked Pottery

Key B: "North Pontic Pit-grave culture" **is the Kurgan culture after the conquest of the North Pontic area; "South Russian-Kazakhstan** ***Pit-grave culture"*** **is the Kurgan culture which remained in the original territory, parent to the Bronze Age Timber-grave culture.**

With respect to Indo-European linguistic unity and the possible preset of dialectal differentiation in times of unity, Meillet in *Les Dialèctes Indoeuropéens* (1908) wrote that the Indo-European speakers would have had to be ruled by a powerful aristocracy who managed to impose the same language and the same social organization over a vast area of Europe and Asia. The



Map 3: East European cultures during the Bronze Age

archaeological evidence is in favor of this interpretation. Moreover, the written records of the 2nd millennium BC have proven it by vividly disclosing the military prowess and political authority of the Hittites, Kassites, and Mitanni in Anatolia and Mesopotamia and of Hyksos in Palestine and Egypt. That the Kurgan people succeeded in conquering almost two-thirds of the European continent was probably largely due to their social organization and to the possession of vehicles. The stock keeping and the small patriarchal communities living in small villages on fortified high river banks as well as the presence of vehicles is evidenced by Kurgan finds dating from the last centuries of the 4th millennium and from the successive centuries. The Kurgan elements fully correspond with the early stratum of Indo-European words concerning social structure, pattern of habitation, architecture (small rectangular timber houses), economy (predominantly stock-breeding and farming on a small scale), and religion (horse sacrifice, sun symbolism, etc.). None of the cultures in the Balkans, in central and northern Europe, before the intrusion of the Kurgan peoples, shows this correspondence. This is the basic argument against the assumption of the Tripolye, Danubian, and Funnel-necked Beaker cultures being Indo-European. Many of the old European cultures seem to have been sooner or later Indo-Europeanized and were reorganized following the Kurgan pattern. Large agricultural villages in the plains of the Danube and the Balkans disappeared, as did the long megalithic or trapeze-shaped graves in northern Europe. Rectangular house-graves of timber or of stone slabs under low barrows replaced flat cemeteries and large tombs with collective burials. The Kurgan people did not exterminate the endemic population. For about two or three centuries after the Kurgan appearance in Europe, archaeology shows a

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Key to Map 3:

Cultures of Kurgan Origin:

1. **Northern Area or Proto-Germanic**
2. **Baltic, ancestral to Old Prussians, Lithuanians, Latvians, and other east Baltic tribes**
3. **Fat'janovo, closely related to the Baltic; disappeared at the end of the 2nd millennium BC**
4. **Únĕtice (called "Tumulus" after *c.* 1400 BC), parent culture to the later Celts, Italians, Veneti, Illyrians, and possibly the Phrygians**
5. **North Carpathian or Proto-Savic**
6. **Otomani, unidentified; conquered or disturbed by the Únĕtice-Tumulus people at the end of the 15th century or *c.* 1400 BC**
7. **Monteoru or Proto-Dacian**
8. **Tei, Thracian; the Bronze Age culture in Bulgaria is not sufficiently known**
9. **North Pontic or Cimmerian**
10. **Timber-grave or Proto-Scythian**
11. **Incrusted Pottery, unidentified, demolished or disturbed by the Únĕtice-Tumulus culture**
12. **Gîrla Mare and Verbicinara (the latter very recently discovered between Gîrla Mare and Tei, not shown on the map), unidentified**
13. **Mycenaean (Late Helladic I and II) or Proto-Greek in Greece (not shown on the map)**

Non-Indo-Eurapean Cultures:

1. **Vatya, Pecica**
2. **Koban, Cotchidic, and Kaja Kent, Caucasian**
3. **Turbino (Gorbunovo) and its offshoot, the Textile Pottery group, Finno-Ugrian**
4. **Asbestos Pottery, Proto-Lapp**

coexistence of different cultural elements, a process of hybridization, a degeneration and a gradual disappearance of local elements. The old cultural patterns tapered off, but the influence of the substratum cultures remained as a strong undercurrent which led to an increased differentiation of the culture and to the formation of a variety of separate groups. Linguistic differentiation had to be affected by the same conditions. The spread of the Indo-Europeans was not a transplantation of people with all their belongings; it was a conquest, having analogies in other expansions in later prehistoric and the historic periods. The several waves of expansion between 4500 and 2500 BC cannot be underestimated and ascribed to a northern branch of the Indo-Iranian people. I would like to see in the expanding Kurgan people the common ancestors of all Indo-European groups that formed in the successive centuries in Europe and the Near East. Only the expansion explains the astonishingly close relationships between such far removed languages as Old Indic and Lithuanian.

The Bronze Age Formations in Europe

At the beginning of the 2nd millennium, new cultural groups were formed which can be considered as nuclei of the later Bronze and Iron Age cultures, some of which continued in the same location to historic times and whose identification with certain Indo-European linguistic branches is enlightened by the distribution of river and place-names. It would take us too long to go through a step-by-step examination of the Bronze Age cultures and their belonging or not belonging to the Indo-European peoples. For this reason I reproduce here a Bronze Age map (Map 3) pertaining to about the middle of the 2nd millennium (from my forthcoming monograph dealing with the cultures of central and eastern Europe [Gimbutas 1965]). It differs in many respects from the Bosch-Gimpera Bronze Age (1600-1200 BC) map. I do not find in my own investigations Tocharians in Volynia, Dacians in Hungary (identified by Bosch-Gimpera with the "Tószeg" – which in archaeological literature is not used as a name for a culture, but is a stratified site with layers of several different cultural groups: Nagyrév, Otomani, and Tumulus), Illyrians in Early Bronze Age Yugoslavia, Slavs in central Europe (identified by Bosch-Gimpera as well as by Kostrzewski and other Polish prehistorians with the Lusatians, the Urnfield people in eastern Germany and western Poland) or "Tripolye survivals" in eastern Romania in the period between 1600 and 1200. The northern Balkans are virtually blank on his map.

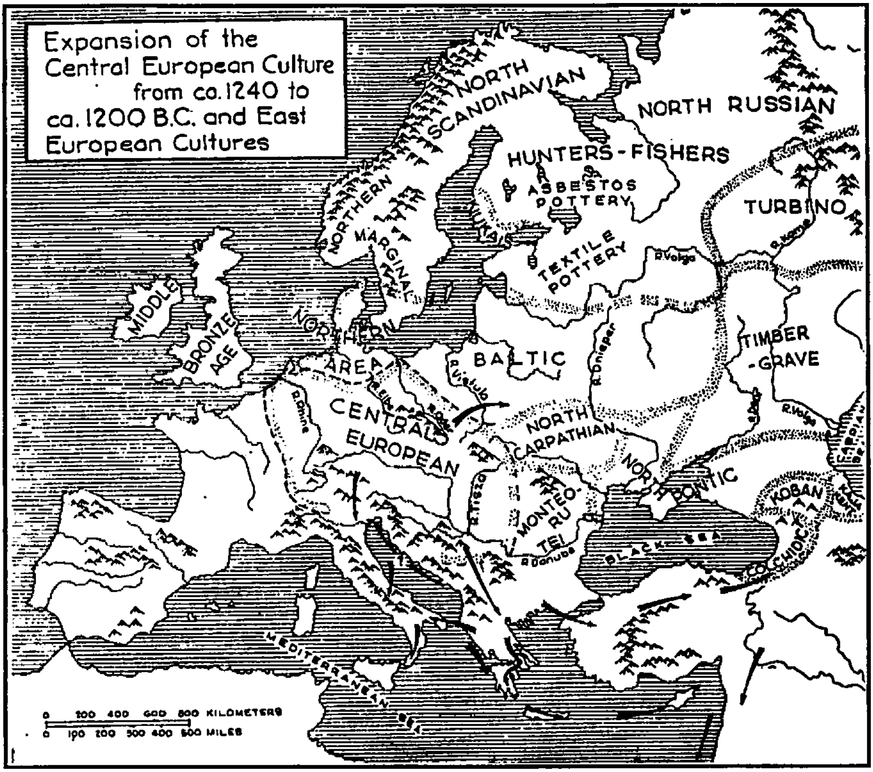
A long persistence of localized Indo-European branches is best traced in those European areas which were marginal to or not involved in, at least throughout the Bronze Age, any of the subsequent expansions. These areas comprise: the south Scandinavian-northwest German (Germanic), the East Baltic-central Russian (Baltic), the North Carpathian (Slavic), the Monteoru in eastern Romania (Dacian), Tei, south of the lower Danube in southern Romania and northern Bulgaria (Thracian), the North Pontic-northwest Caucasian

(Cimmerian), the lower Volga and Siberian steppe culture – the Timber-grave and Andronovo complexes (Proto-Scythian or Indo-Iranian).

Stability in the European Bronze and Iron Ages is hardly known. There was always someone who was moving. The people who had in their possession the central European copper sources naturally became the most powerful and very soon started to extend their borders. This was the Únĕtice (Aunjetitz) Early Bronze Age culture, the parent culture to the Middle Bronze Age Tumulus and the Late Bronze Age Urnfield culture (including the Lusatian-Lausitz, which archaeologically was the same Urnfield culture). Archaeology shows for this period a great uniformity in a vast area between the Rhine, western Poland, and the middle Danube. It seems possible that this culture, unified by a powerful political rule and a very active trade, was the cradle of the Proto-Celtic, Proto-Italic, Proto-Venetic, Proto-Illyrian, and perhaps Proto-Phrygian cultures, as linguistic evidence and subsequent expansions indicate. At the end of the 15th century, or *c.* 1400 BC, the central European culture, now called "Tumulus," expanded all over the Middle Danube area (Hungary and northern Yugoslavia) and to western Transylvania, resulting in the demolition of the following cultural groups: the Incrusted Pottery, Vatya, Pecia, and (in part) Gîrla Mare, and in the conquest of the Otomani culture, probably of Kurgan origin (Map 3). The Illyrian culture could have been diffused in this period to northern Yugoslavia and Bosnia, and the Venetic to northeastern Italy.

At the end of the 13th century, from *c.* 1240 to the beginning of the 12th century, the Central European peoples carried out further expansion southward, causing great changes and destruction in the Apennine and Balkan peninsulas and in Anatolia. The general routes are shown on Map 4. The expanding central Europeans spread the Illyrian language to the Adriatic coasts, western Greece, and to Italy (Sikel in Sicily, and Messapic in Apulia and Calabria). In the great expansion several other Indo-European groups seem to have been involved. The most vigorous allies of the Illyrians had to be Phrygians and Armenians, whose European homelands archaeologically cannot as yet be fixed, but on the basis of language relationships these people had to be located between the Illyrians, Slavs, and Thracians. From linguistic sources it is known that the Phrygians and Armenians wandered across Greece to Anatolia, causing there the destruction of the Hittite empire. At the end of the chain of north-south movements were the Dorians, who came into the Peloponnese as an aftermath of the expansion period.

The central European expansions, one at the end of the 15th century BC, and the other at the end of the 13th, were decisive for the later Indo-European developments in the Apennine and Balkan peninsulas and in Anatolia. The Urnfield people in the North Alpine-upper Rhine area expanded to northern France and the lower Rhine and by the late 8th century BC had reached Catalonia, beyond the Pyrenees. This western expansion represents the Celtic movements (Hencken 1955; Kimmig 1962). Before and after 500 BC the Celts appeared in southern Britain (Hawkes 1961). The Urnfield people in upper

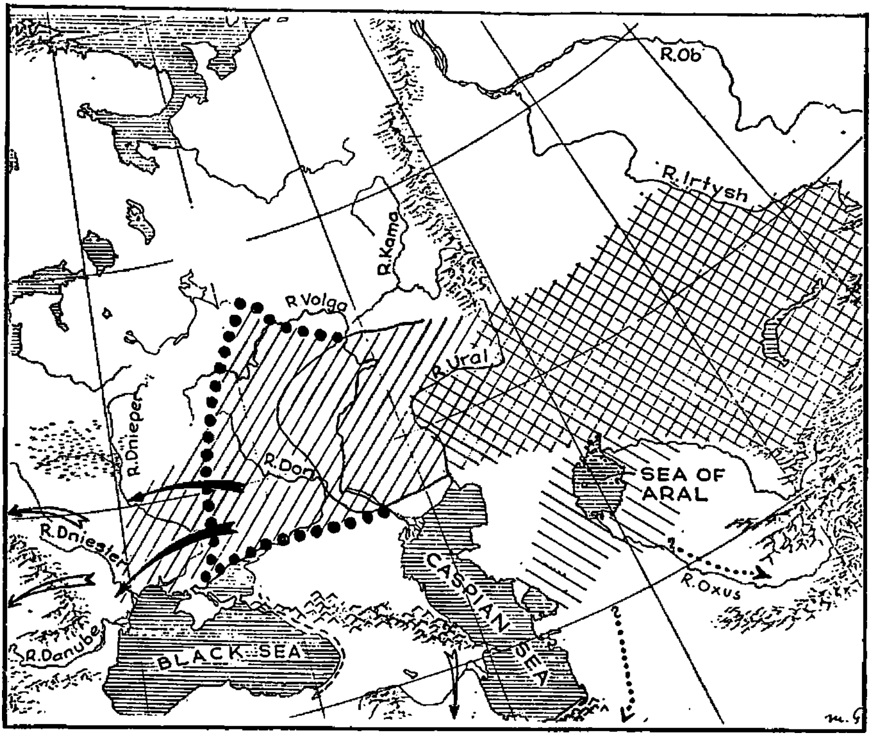


Map 4: Map of Central and East European cultures during the "great migration and devastation" period.

***Arrows* indicate approximate directions of the movement in which the central European Urnfield peoples and their allies in the Aegean area destroyed the Mycenaean culture, the Hittite Empire, and shook the East Mediterranean states.**

Austria and Bavaria transgressed the Alps and settled in Italy starting there the Previllanovan culture in the 12th century BC.

Another event of great scope that caused changes in eastern Europe was the constant westward advance of the Proto-Scythian (Timber-grave) horsemen culture (Map 5). Its expansion had several stages; around 1800 BC it was already present in the larger part of the eastern Ukraine (Don and Donets River basins); around 1100 it had reached the lower Dnieper; and by the end of the 8th century, Proto-Scythians had conquered the Cimmerians, expelling them into Asia Minor. Their traces were left only in the Crimea and in the northwestern corner of the Caucasus. Their restless drive did not stop at the Black Sea; similarly as had the Kurgan people earlier, they invaded the eastern Balkans and central Europe – Romania and Hungary to the Middle Danube in



Map 5: Indo-Iranian (Timber-grave-Andronovo-Tazabag'jab) Culture of the 2nd Millennium BC and Expansions

▨	**Distribution of the Timber-Grave Culture**
▦	**Distribution of the Andronovo Culture**
⊂	**Western limits of the Early Timber-Grave culture in the beginning of the 2nd millennium BC**
● ● ● ● ●	**Occupied area *c.* 1800 BC**
←—	**Expansion *c.* 1100 BC**
⧅	**Distribution of the Tazabag'jab culture**
←	**Scythian expansion at the end of the 8th century BC to Central Europe and in the 9th century BC to the Near East**
←- - - - -	**Migration of the Cimmerians**
←• • • • • •	**Probable routes of expansion to Persia and India *c.* 1600-1400 BC**

the west – causing the orientalization of eastern central Europe. This period is misleadingly called "Thraco-Cimmerian," based on the assumption that it was Cimmerians rather than Scythians who appeared in central Europe. The name is a misinterpretation of archaeological materials, since neither the Cimmerians nor the Thracians intruded on central Europe; Cimmerians, pushed by the Scythians, fled southward via the Caucasus, and the Scythians, in their pursuit, acquired many of the Caucasian (Kobanian) cultural elements and carried them into central Europe. In the 5th century BC, the Scythians advanced into central Europe as far as eastern Germany and northern Poland.

Subsequent periods saw the Celtic, Germanic, Slavic expansions and migrations, the growth of the Roman Empire, the Viking raids, and so on. The Indo-European "vagabonds" were terribly restless and rapacious. Many of the Indo-European cultures and languages either disappeared or lost great portions of their previously possessed lands (Cimmerian, Scythian, Hittite, Illyrian, Phrygian, Celt, Balt, and other, many of which we do not know by name). There never was a period of "definitive development and of a final linguistic crystallization" – either in prehistoric, or in historic times. All was fluid, all was and still is changing.

Conclusions

1. Archaeological evidence is against the European theory of the Indo-European homelands.
2. The Kurgan expansions of 4500-2300 BC into the North Pontic area, Anatolia, the Aegean, the Balkans, central Europe, northwestern Europe, the East Baltic area, and central Russia brought destruction to the old European Neolithic and Chalcolithic cultures and to the Early Bronze Age Aegean and western Anatolian cultures.
3. The impetus for expansion lies in the Eurasian steppes, in the lower Volga basin and beyond the Caspian Sea.
4. The invasion (or several waves of invasions) most likely occurred in the period between 4400-4200. This time interval is indicated by carbon-14 dates for the early Kurgan graves and corded pottery and by the dates for the destruction layers of Troy II, Beycesultan XIII, and Early Helladic II Lerna.
5. The Kurgan culture spread astonishingly uniform cultural elements all over the vast area of Europe, the Caucasus, and Anatolia. Archaeological evidence and the earliest historic records show that these people were ruled by powerful kings and a council of nobles. They were in possession of vehicles drawn by oxen. Horse is evidenced from the earliest Kurgan phases and onwards, but apparently was used for milk and meat and as a sacrificial animal like sheep and cattle. Their social system and economy provided unlimited possibilities for invasion and conquest. They entered the civilized world in the Near East, Anatolia, and the Aegean area, establishing there their own states;

they conquered the agricultural peoples in the Balkans and central and northern Europe and occupied even the forested areas in the East Baltic area and central Russia inhabited by hunters and fishers.

6. The presence of separate Indo-European groups or languages in the early 2nd millennium BC (Hittite, Luwian, Kassitic) speaks for the existence of separate tribal units and dialects or languages. This allows one to presume that the Kurgan people who moved westward and southward from the Eurasiatic steppes were already divided into tribes that spoke various dialects.

7. Wide dispersal throughout areas of varied cultural and natural background caused the further differentiation. Even before expanding into Europe and Anatolia, the Kurgan culture was already infused with North Pontic and Caucasian elements.

8. The Kurgan group in the northern Caucasus, which was intimately related to the Transcaucasian culture, may have been parents of the Cimmerians and possibly the Kassites and Hyksos.

9. The Kurgan elements in the Aegean, western Anatolia, in the Balkans, and in central and northern Europe must have come via the lower Dnieper area after the conquest of the North Pontic (Mariupol) culture.

10. The diffusion of the Indo-Iranians to Persia and to India before or after the middle of the 2nd millennium BC seems to be connected with that of the Bronze Age Andronovo bloc east and north of the Caspian and the Sea of Aral. Its offshoot, called Tazabag'jab, shows a constant expansion southward and eastward around the 15th-14th centuries BC.

11. In Europe, a number of new cultural groups of Kurgan origin arose soon after the beginning of the 2nd millennium BC, some of which show an indubitable persistence throughout the Bronze Age and later. Best archaeologically and linguistically proven are: 1) the Proto-Germanic in northern Germany and southern Scandinavia; 2) the Proto-Baltic between eastern Pomerania in the west and the upper Volga and upper Oka basins in the east; 3) the Proto-Slavic north of the Carpathians; and 4) the Proto-Dacian (Monteoru) in eastern Romania. The cradle of the Celtic, Italic, Venetic, Illyrian, and perhaps even Phrygian cultures must be looked for in the Corded and the Early Bronze Age Únĕtice culture of central Europe. The great expansions of the central European culture at the end of the 15th century or *c.* 1400 BC and at the end of the 13th century or *c.* 1200 BC diffused Illyrian and Venetic to the Apennine Peninsula and the Balkans, Italic to Italy, while Phrygian and Armenian spread to Anatolia. The Late Bronze Age-Early Iron Age expansion of the western central European Urnfield group brought Celtic to France, Spain, and southern Britain. Further cultural changes and linguistic differentiations were caused by the Scythian advance into eastern central Europe, the Greek colonization, the Celtic expansion, the rise of the Roman empire, and the subsequent Germanic and Slavic expansions.

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Chronologies of Eastern Europe: Neolithic through Early Bronze Age[*]

The Earliest Agriculturalists North of the Black Sea

The Dniester-Bug Culture

The stratigraphy of systematically excavated sites documents an extended period of autochthonous experiments in animal and plant domestication by hunter and fisher groups who had occupied the area from the Mesolithic (Markevich 1974; Danilenko 1969). Stratigraphy and radiocarbon dates have verified a sequence of three pre-pottery and five ceramic phases, from *c.* 6500 BC to *c.* 5500-5200 BC. Four radiocarbon dates are known from Soroki (see Table 1). The earliest layers of the site were about 20 cm thick; phase 1 was separated from phase 2 by a sterile layer.

			Half-life		
	Site	**Lab. No.**	**5568 BP**	**5730 BP**	**CRD 1 σ BC**
Phase 1	Soroki II$_3$	Bln-588	7515 ± 120	7750	*5800
Phase 2	Soroki II$_2$	Bln-587	7420 ± 80	7640	*5690
Phase 3	Soroki II$_1$	Bln-586	6825 ± 150	7015	5900-5410
Phase 4	Soroki 5	Bln-589	6495 ± 100	6675	5550-5250

* Estimate

Table 1: Dniester-Bug Sequence

The two earliest Neolithic levels (Soroki II$_{3\text{-}2}$) lack pottery but contain bones of domesticated cattle and pigs, wild wheat seeds *(Aegilops cylindrica)*, and small grinding querns. Domestication of pigs and cattle was probably accomplished independently by the Dniester-Bug population, and wild wheat was gathered some five hundred years prior to contacts with Starčevo (Criş) agriculturalists. High percentages of fish bones (roach of the carp family, eel, and pike), recovered from the earliest villages, indicate that the availability of fish may have provided the initial impetus toward a settled way of life. Throughout the duration of the Dniester-Bug culture, farming was a secondary aspect of an economy based on fishing and the hunting of aurochs, red and roe deer, and boar. Soroki II$_1$ (the second phase with pottery), *c.* 5800-5500 BC, contains einkorn wheat, the most commonly cultivated species in southeastern Europe. A series of sites of the Pottery Neolithic phases have yielded emmer wheat and spelt, in addition to the dominant einkorn wheat; their existence was established by the impressions of husks, ears, and grains in the ceramics. Further evidence is the use of straw as pottery temper (Janouchevitch and Markevitch 1971). The small Pre-Pottery villages of semi-subterranean dwellings are located on the narrow batik between the river and the steep slope of the lowest terrace. The Pottery Neolithic settlements included above-ground houses (see Table 2).

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The indigenous equipment of the Dniester-Bug population was notably different from that of Starčevo and Karanovo agriculturalists. Polished stone tools were rarely produced; rather, antler was employed in a variety of ways, including the manufacture of axes, probably used to prepare the ground for planting. A gradual microlithization of flint tools is observable. Small chips set in bone or antler handles were used as points, scrapers, and knives. Burins and perforators were also microlithic.

The earliest coarse ceramics were large, pointed, or flat-based pots, constructed of clays tempered with vegetable matter and decorated with linear incisions (Fig. 1/I). The influence of the Starčevo culture is visible around the middle of the 6th millennium in the appearance of fine, well-fired, plain (gray or buff) and painted wares (see Fig. 1/II). The superseding of Starčevo elements by central European Linear Pottery styles marks the end of the independent Dniester-Bug culture.

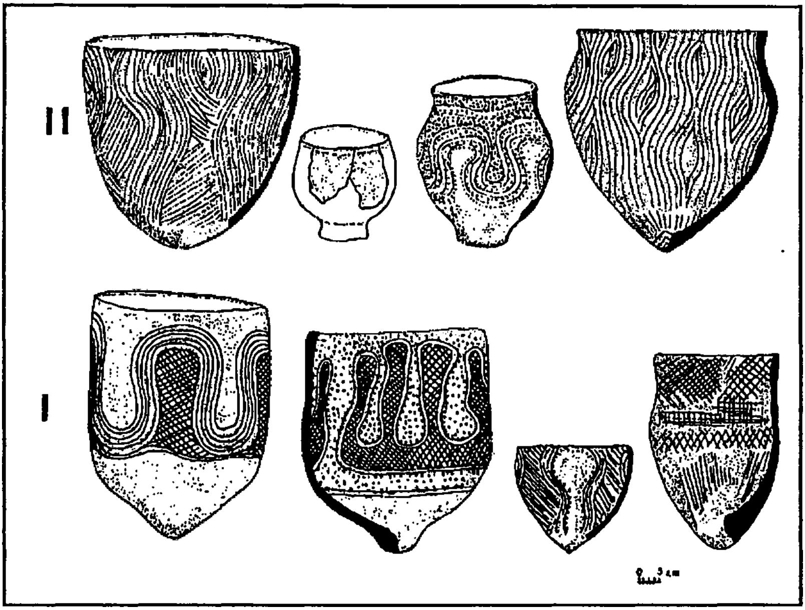


Fig. 1: Pottery from the earliest Dniester-Bug Pottery Neolithic I and II, 6000-5500 BC: I) Baz'kov Island, lower; II) Sokolstsy, lower, southern Bug Valley. (*After* Danilenko 1969.)

	Radiocarbon	Sites	Economy, Habitat
End of 6th millennium		*Pottery Neolithic*	
	6495 ± 100 BP	V Soroki V (Dniester)	
	5555-5250 BC	Tsikinovka (Dniester)	
		Savran (Bug)	
		IV Soroki I, layer Ia (Dniester)	Einkorn, emmer wheat, spelt
		Samchin (Bug)	
		Sokoltsy VI, upper (Bug)	
		Baz'kov, middle	
Mid-6th millennium		III Soroki I, layer Ib, (Dniester)	Above-ground homes
		Soroki III (Dniester)	
		Pechera (Bug)	
		Mit'kov, upper (Bug)	
	6825 ± 150 BP	II Soroki II, layer I	Einkorn wheat, semi-subterranian houses
	5875-5425 BC	Sokoltsy, lower (Bug)	
		I Skibinets (Bug)	True Neolithic with pottery and plant cultivation
		Mit'kov, lower (Bug)	
		Baz'kov, lower (Bug)	
		Pre-Pottery Neolithic	
		3 Soroki I, layer 2	Semi-subterranean dwellings
Early 6th millennium	7420 ± 80 BP	2 Soroki II, layer 2	Domestic cattle appear
	*5690 BC	Siniyukhin Brod (Bug)	
	7520 ± 120 BP	1 Soroki II, layer 3 (Dniester)	Pig, dog domesticated
	*5795 BC		Fishing prevalent, no cultivated plants
			Transition from Mesolithic to Neolithic

*Estimate

Table 2: Dniester-Bug Chronological Sequence

North Pontic Neolithic Groups

The earliest Neolithic stage north of the Black Sea is represented by the Matveevo group northeast of the Sea of Azov (Krizhevskaya 1978). The settlements belong to settled fishermen with incipient pig and sheep/goat domestication. The analysis of animal bones has shown 85 percent wild forest fauna, 5 percent domesticated animals, and 10 percent probably domesticated animals. Only tiny bits of poorly fired pottery, tempered with concretions of limestone, were discovered. Clay was also used for figurines and for other purposes (clay daub was found).

Two radiocarbon dates obtained from the charcoal of Matveevo place this stage in the second half of the 7th millennium BC:

Lab No.	**Reported Date BP**	**CRD 1 σ BC**
GrN-7199	7505 ± 210	5780 ± 210 (estimate)
LE-217	7180 ± 70	6290-5705

Next in importance is the Rakushechnyi Yar site in the lower Don basin, district of Rostov (Belanovskaya 1978; Telegin 1981). Cultural deposits were nearly 5 meters thick and consisted of twenty-three horizons; all except the upper two are assigned to the Atlantic climatic period. Of the six culture layers, the four lower strata (VI-IIIb) belong to the local Neolithic; the upper (IIIa-I) belong to the Eneolithic (Srednij Stog II and Yamna) culture. Two radiocarbon dates were secured for the lower Neolithic layers (V-IV):

Lab No.	**Reported Date BP**	**CRD 1 σ BC**
Bln (no number)	6070 ± 100	5220-4905
KI-955	5790 ± 105	4755-4545

The upper layer (IIIa) is dated by a single radiocarbon date:

Lab No.	**Reported Date BP**	**CRD 1 σ BC**
Bln (no number)	4360 ± 100	3180-2895

The radiocarbon dates from the Neolithic strata of the Rakushechnyi Yar are more than a thousand years later than those of Matveevo. Connecting links between the two are missing. However, the culture seems to represent a local development. Fishing continued essential to the economy; animal husbandry was more advanced, including cattle, sheep/goats, pigs, dogs, and horses (probably domesticated). Cultivated plants have not, as yet, been discovered. Thick-walled pots, tempered with vegetable matter or crushed shells, were flat-based. Houses were built of timber uprights covered with clay daub. Flint workshops included long-blade tools. Bone was extensively used for fishing tools.

Related Neolithic layers, with pottery and domesticated animals, are known from the Crimean caves and the islands of the Dnieper rapids, but unfortunately, no radiocarbon dates for these are available.

The Crimean Neolithic is subdivided on a typological basis into six phases, named after excavated sites: (1) Ash-Bash; (2) Zamil-Koba; (3) Tash-Air (6th layer); (4) Kaya Arasi; (5) Tash-Air (5th layer); (6) Dolinka.

Several caves, Tash-Air, Zamil Koba, and Kaya Arasi, are significant for reconstructing the history of animal domestication north of the Black Sea. All three have stratified deposits with Upper Palaeolithic material at the base and are overlain by Mesolithic strata. Above the Mesolithic, two Pottery Neolithic layers included a large number of pig bones, in which wild and domesticated species were mingled. Crimean cave sites also yielded bones of domesticated dog and cattle (at Kaya Arasi: Formozov 1962:109). The dark gray or black pottery, pointed-based and thick-walled, was tempered with crushed limestone or sand, and decorated by impression and incision. The flint industry includes geometric microliths.

The lower Dnieper Neolithic is known from the series of sites south of Dniepropetrovsk, where the stratified sites of Surskii and Shulaev indicate a development parallel to that of the Rakushechnyi Yar Neolithic strata. An earlier layer at Shulaev yielded about 20 percent domesticated animals (dogs and cattle), while the upper layers in both Shulaev and Surskii contained nearly 40 percent domesticated animals: cattle, dogs, pigs, and sheep (Danilenko 1969:179). The Dnieper transgressions into the lowest layers, and deposits of paludinae shell, indicate damp conditions. The end of this culture was caused by a gradual takeover of the lower Dnieper basin by the descent of the Dnieper-Donets people from the north.

The Dnieper-Donets Culture

The earliest phases of the Dnieper-Donets culture are found in the middle Dnieper basin. From there the Dnieper-Donets people descended to the shores of the Sea of Azov and spread eastward to the upper Donets area (see Map 1) marked by the distinctive practice, without close parallel elsewhere, of collective burial in trenches, in which the dead, of massive Crô-Magnon type, lay in an extended position. The large cemeteries (some containing over one hundred skeletons) of the late phase of the culture suggest a settled way of life. Habitation sites revealed subsistence based on hunting, fishing, shellfish collecting, and domestication of cattle, pigs, sheep/goats, horses, and dogs. The present knowledge of this culture stems from finds at two hundred localities (Telegin 1968), although the village structure and architecture are unknown. Dnieper-Donets sites yielded large pointed-base pots with vegetable temper; a flat-based, bulbous, rimmed vessel is characteristic of later sites.

The chronology is built on the relationship between the Dniester-Bug and the Early and Classical Cucuteni cultures.

On the basis of parallels with the Dniester-Bug culture, the beginning of the Dnieper-Donets culture should be sought in the 6th millennium.

Early Cucuteni (*i.e.*, "pre-Cucuteni") and Early Classical Cucuteni potteries coincide with the middle period of the Dnieper-Donets culture and place it within the first half of the 5th millennium BC. The latest Dnieper-Donets sites have been shown to parallel the Cucuteni *AB* and *B* phases, and should consequently be dated *c.* 4000-3500 BC (see Table 6).

On typological grounds, the Dnieper-Donets chronological sequence consists of at least eight phases labeled by site names: Igren 8, Bondarikha, Yosipivka (Osipovka), Mariupol, Mikol'ske, Grini, Zasukha, and Pustinka (see Table 3). There are only a few radiocarbon dates.

The Dnieper-Donets culture is subdivided into three periods, *A, B,* and *C*. *Period A* is characterized by cemeteries of pit hollows and row trenches which contained from one to ten or eleven ochre-colored skeletons. Microlithic flint tools, fish, and deer teeth are usual grave gifts. Pottery vessels were not found in graves. Annular beads of shell and agate appeared in the *A2* subphase. The most likely date for this period is 5500-5000 BC.

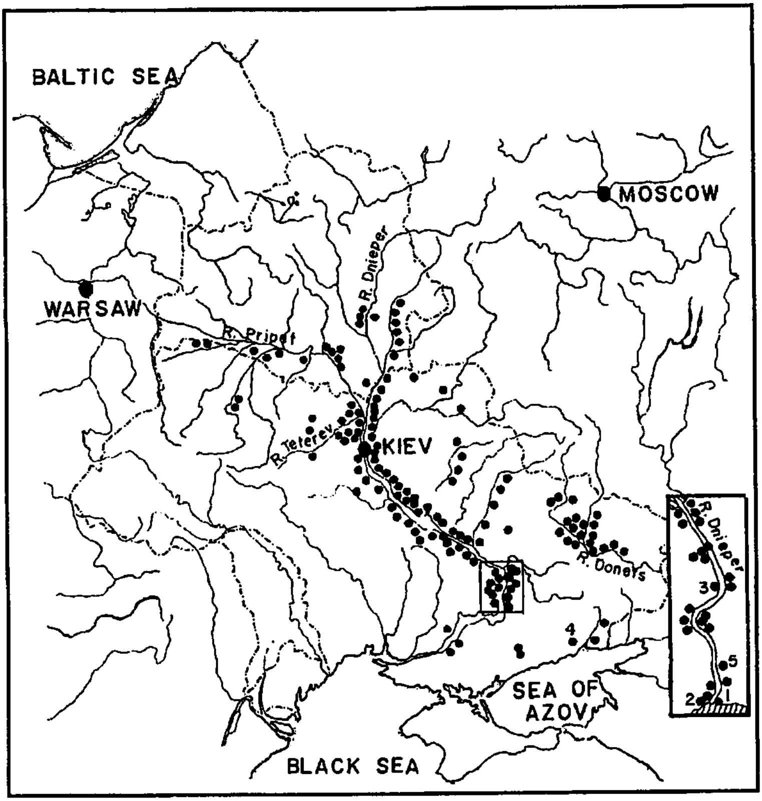
Period B is characterized by large collective pits, sub-rectangular in shape, filled up with skeletons and covered with powdered ochre. Because of the repetitive use of the grave pits, the skeletons of the previously buried dead were usually destroyed and the skulls were moved into a distant corner of the pit, or were reburied in a separate pit. Fish and deer teeth were not as frequent as in *Period A* graves. Annular beads and plates made of boar tusk were numerous. Pottery vases were usual finds. A few radiocarbon dates for *B2* cemeteries in the Dnieper rapids region place this phase into a period of 5000-4500 BC.

	Lower Dnieper	**Crimea**	**Lower Don**	**Dnieper-Donets**
				Pustinka
				Zasukha
				Grini
				Mikol'ske
		Dolinka		Mariupol
c. 5000 BC		Tash-Air (V)		
	Strilcha	Kaya Arasi	Rakushechnyi	Yosipivka
	Skela		Yar	(Osipovka)
	Surskii	Tash-Air (VI)		Bondarikha
	Shulaev	Zamil Koba		Igren
		Ash Bash		
c. 6500 BC			Matveevo	

Table 3: North Pontic Neolithic

Period C, approximately 4500-4000 BC, is a stage marked by disintegration and evident decline of the culture. The collective burial in grave pits gradually vanished and an alien burial practice was introduced. Steppe people of a different physical type (less broad-faced) came into this area and the Dnieper-Donets people were either pushed northward or assimilated by the invaders. The last phase is known only from the northern territories of the Upper Dnieper, Pripet, and Nemunas basins.

In northeastern Poland and southern Lithuania, the "Nemunas" branch of this culture was assimilated before or around 3000 BC by the central European Globular Amphora culture.



Map 1: The distribution of the Dnieper-Donets culture. Dnieper-Donets sites in Dnieper rapids area (framed): 1) Srednij Stog I; 2) Sobachki; 3) Mikol'ske; 4) Mariupol; 5) Vilnyanka.

The Cucuteni Culture

Affiliated with, and periodically stimulated by, its southern neighbors, the Boian variant of the East Balkan tradition, the Cucuteni culture of Moldavia and the western Ukraine formed the northerly outpost of Old European civilization. Ethnically the Cucuteni culture was a medley of the indigenous inhabitants (Dniester-Bug and Linear Pottery) and infiltrating Boian Mediterraneans. Since the forest-steppe environment necessitated shifting agriculture, there accrued no accumulation of large mound deposits such as are found in Bulgaria and southern Romania. Habitation sites are located on the terraces in the middle and upper basins of the Siret, Prut, Dniester, and Boh (southern Bug) rivers, and during the latter half of the culture, in the middle Dnieper area (see Map 2).

Discovery, Name, and Early Chronological Classifications

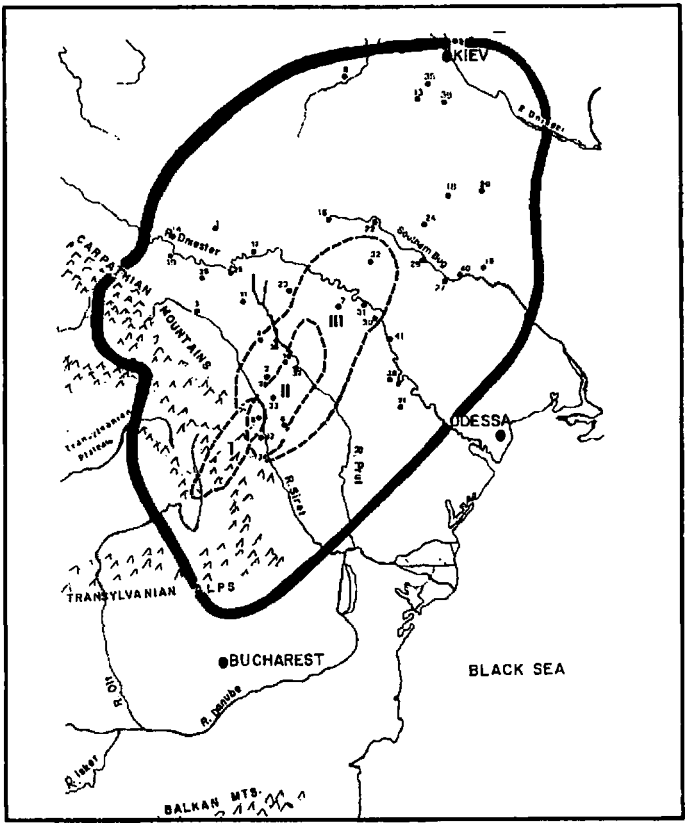
Among the earliest discovered sites were (1) Cucuteni in northern Moldavia, first reported in 1889, and later systematically excavated in 1909 and 1910 by Hubert Schmidt (Schmidt 1932); (2) Sipintsi (Schipenitz) in what was formerly Bucovina, reported by J. Szombathy in 1893 and published by Kandyba (1937); and (3) Tripolye (in Ukrainian, Tripilye) on the middle Dnieper, reported by Khvojko (1899). The baked clay floors of large houses, the bichrome and trichrome vases, and the hundreds of female figurines found during these early excavations soon aroused international interest.

Since its discovery, two names for the culture have been in use: "Tripolye" in Russia and "Cucuteni" in Romania. Both terms took root, and both terms continue after a century of research to be applied to one and the same culture.

The stratified site of Cucuteni in the middle Prut Valley was of utmost importance in the consequent research of this culture, and its name certainly deserves to designate it. During the excavations at Cucuteni of 1909-10, Hubert Schmidt came upon traces of two consecutive strata. The lower, or *A* stratum, contained trichrome pottery, and the upper, *B* stratum, included bichrome. Soon thereafter, Schmidt discovered another site in the same area (Dîmbul Morii) with pottery showing a style intermediate between Cucuteni *A* and *B*. The label "Cucuteni *AB*" was given to this new phase. After Schmidt published his book *Cucuteni in der Oberen Moldau, Rumänien* in 1932, the knowledge of the Cucuteni *A, AB,* and *B* strata constituted a benchmark for all further chronological studies. In the excavations of 1936, 1938, 1940, 1951, and later, thousands of square meters of Cucuteni *AB* settlement were revealed at Traian by Vladimir and Hortensia Dumitrescu (H. Dumitrescu 1952-59; V. Dumitrescu 1945).

New light was thrown on an even earlier phase by the excavations of Radu Vulpe in 1936 and 1948 at Izvoare, near Neamţ in the basin of the upper Siret, Moldavia. There Vulpe discovered a stratum with monochrome, incised pottery which preceded Cucuteni *A* and was thereupon called "Pre-Cucuteni" (Vulpe 1957). Finds of Pre-Cucuteni character also appeared at other sites such as Traian-Dealul Viei (or Zăneşti), Traian-Dealul Fîntinilor, Larga Jijiei (V. Dumitrescu 1959), and Tîrpeşti (Marinescu-Bîlcu 1974), and the early stage was divided into Pre-Cucuteni I, II, and III. The Romanian archaeologists continue to use the term "Pre-Cucuteni," although it does not designate a culture preceding the Cucuteni. The Pre-Cucuteni phases should be understood as Early Cucuteni.

On typological and stratigraphic grounds Dumitrescu (1963) has defined four phases of Cucuteni A: A_1, A_2, A_3, and A_4. To the first two, Cucuteni A_1



Map 2: The distribution and major sites of the Cucuteni culture. I, II, III; the distribution of the earliest Pre-Cucuteni I, II, III-Tripolye *A*. Dashed area: the distribution of the Neolithic Dniester-Bug culture.

Sites

1. Bilcze Zlote
2. Cucuteni
3. Darabani
4. Draguşeni
5. Evminki
6. Fedeleşeni
7. Floreşti (Floreshty)
8. Frumuşica
9. Gorodsk
10. Hăbăşeşti
11. Horodnica
12. Izvoare
13. Kolomiishchina
14. Koshilivtsi
15. Krutoborodintsi
16. Larga Jijiei
17. Luka Vrublevetskaya
18. Maidanetske
19. Nezvisko
20. Novo Rozanovka (Ukrainian Novorozanivka)
21. Novye Ruseshty
22. Pechera (Dniester-Bug)
23. Petreni
24. Pyanishkovo
25. Polivanov Yar
26. Ruginoasa
27. Savran (Dniester-Bug)
28. Sipintsi (Schipenitz)
29. Skibintsi (Dniester-Bug)
30. Soloncheni
31. Soroki-Trifouts'kii Lis (Dniester-Bug)
32. Stena (Stina)
33. Tîrpeşti
34. Traian
35. Tripolye
36. Truşeşti
37. Valea Lupului
38. Varvarovka (Ukrainian Varvarivka)
39. Veremie
40. Vladimirovka (Ukrainian Volodimirivka)
41. Vykhvatintsy (Ukrainian Vikhvatintsi)

and A_2, belong two strata of the Izvoare site, II_1 and II_2 (Vulpe 1957), and of the Frumuşica site, the latter excavated by R. P. C. Matasă (Matasă 1946); also a large village of Truşeşti, north of Iaşi in Moldavia (Petrescu-Dîmboviţa 1963), and other sites. A number of other great sites belong to Cucuteni A_3, which equates to Hubert Schmidt's Cucuteni *A*, among them one of the layers of the very prominent stratified site of Hăbăşeşti, excavated in 1949-50 (V. Dumitrescu 1954). Other sites with related but somewhat more advanced materials (*e.g.*, Ruginoasa, Draguşeni, and Fedeleşeni) are assigned to Cucuteni A_4. The Cucuteni *AB* phase has been subdivided into early and late: $A\text{-}B_1$ and $A\text{-}B_2$ (Dumitrescu 1963).

Cucuteni and Tripolye Classification	**Sites**
Pre-Cucuteni I	Traian-Dealul Viei
Pre-Cucuteni II (Tripolye A_1)	Folteşti, Larga Jijiei, Izvoare I_1, Poduri
Pre-Cucuteni III (Tripolye A_2 and A_3)	Traian-Dealul Fîntînilor, Izvoare I_2, Tîrpeşti, Poduri, Luka Vrublevetskaja, Bernovo Luka
Cucuteni A_1	Izvoare II, Tîrpeşti?, N. Ruseshty I (lower), Poduri
Cucuteni A_2 (Tripolye $B\mathrm{I}_1$)	Tîrpeşti, Cucuteni, Izvoare II_2, Frumişica, Poduri, Margineni, Truşeşti, Polivanov Yar III_1
Cucuteni A_3 (Tripolye $B\mathrm{I}_2$)	Cucuteni, Hăbăşeşti, V. Ruseshty I (upper), Leca Ungureni, Poduri, Polivanov Yar III_2
Cucuteni A_4 (Tripolye $B\mathrm{I}_3$)	Ruginoasa, Draguşeni, Fedeleşeni, Polivanov Yar III_3, Nezvisko (lower)
Cucuteni AB_1 (Tripolye $B\mathrm{II}_2$)	Traian-Dealul Fîntînilor, Corlăteni, Klishchiv, Soloncheni II, Veremie
Cucuteni AB_2 (Tripolye $B\mathrm{II}_2$)	Traian-Dealul Fîntînilor, Cucuteni-Dimbul Morii, Kolomiishchina II, Poduri-Dealul Ghindaru, Vladimirivka, Tripolye, Nezvisko (upper)
Cucuteni B_1 (Tripolye $B\mathrm{III}_1$)	Cucuteni, Petreni, Ghelăieşti-Nedeia, Cucuteni-Cetaţuia, Văleni-Piatra, Neamţ, Poduri, Şipeniţ (Sipintsi), Varvarivka 8, Maidan (Maidanetskoe)
Cucuteni B_3 (Tripolye $B\mathrm{III}_2$)	Cucuteni-Cetaţuia, Valea Lupului, Podei Tg. Ocna, Stina I, Poduri
Cucuteni B_3 (Tripolye $B\mathrm{III}_3$)	Popudnia, Tomashivka, St. Buda, Sushkivka, Stina 4, Krutoborodintsi II, Tripolye *B*, Kolomiishchina I, Sadoveni-Manoleosa
Tripolye *C*I	Koshilivtsi, Novorozanivka, Bilcze Zlote, Chepaevka
Tripolye $C\mathrm{II}_1$	Zhvanets, Vikhvatintsi, Lukashi, Sofiivka II
Horodiştea-Folteşti (Tripolye $C\mathrm{II}_2$)	Usatovo, Ternivka, Parkany, Sukleya, Kolodiazhnoe, Izvoare III, Horodiştea I (Gorodishche), Folteşti

Note: Broken line indicates the end of the Cucuteni civilization; Tripolye $C\mathrm{II}_2$ represents a Kurgan culture with a strong influence of the Cucuteni substratum.

Table 4: Cucuteni and Tripolye Classification on the Basis of Stratigraphy and Typology

The Cucuteni *B* period is also an extended, long-lasting phase. Excavations in the 1960s of habitation sites (Petreni, Valea Lupului, and others) made possible the division of the period into three subphases: B_1, B_2, and B_3 (Dumitrescu 1963). These were represented, for example, when the resumption of the excavation of the Cucuteni site by Petrescu-Dîmbovița in 1961-65 revealed six phases: A_2, A_3, AB_1; AB_2, B_1, and B_2 (Petrescu-Dîmbovița 1965). Thus, in the seventy-five years of spade work in Romania following Schmidt, the chronology of the Cucuteni culture expanded from the two originally identified *A* and *B* periods into twelve distinct phases: Pre-Cucuteni I-III, A_{1-4}. $AB_{1,\ 2}$, B_{1-3}.

A number of villages in the Moldavian and Ukrainian SSR have been excavated before and after World War II; some yielded more than one stratum; for example Nezvisko (Chernysh 1962), Darabani (Passek 1949), Polivanov Yar (Passek 1951; Popova 1978), and others. Tatiana Passek produced a monograph in 1949 on the chronological classification of the Tripolye culture: phases *A, B, C,* with two subphases (Passek 1949). There, Tripolye *A* equates with Pre-Cucuteni II and III; *B*I equates with Cucuteni *A*, and *B*II is synchronous with Cucuteni *AB;* C_1 corresponds to Cucuteni *B*. For the classification of the southern sites Passek introduced the Greek letter γ, to parallel *C*. Since it unnecessarily complicates the system, I have deliberately omitted it from the discussion.

Tripolye *C*II comprises the Gorodsk-Usatovo stage, a Cucuteni-Kurgan mélange during which the Cucuteni culture continued in a degraded form as the culture of a subjugated people. Radiocarbon dates for this phase are given in Table 7. The two phases of the cemetery of Vikhvatintsi, still undoubtedly Cucuteni, apparently belong to a phase preceding the Usatovo, *C*II. Twenty years later, Passek's period *C* was subdivided by Movsha into six phases: Tripolye $BIII_1$, $BIII_2$, $BIII_3$, *C*I, *C*II, CII_2 (Movsha 1972). Tripolye $BIII_{1-3}$ correspond to Cucuteni B_{1-3}; Tripolye *C* became post-Cucuteni *B*. In all, Soviet scholars have succeeded in distinguishing fifteen phases on stratigraphic and typological grounds of the Tripolye culture (including the radiocarbon phases of mixed Cucuteni-Kurgan character; see Table 4).

Radiocarbon Dates

Table 5 lists the available dates (Cucuteni and Tripolye fused as a single culture).

In the basins of the upper Siret, the upper Prut, and the upper Dniester, the earliest Cucuteni ("Pre-Cucuteni") sites follow the "Music Note" phase of the Linear Pottery culture. At Tîrpeşti, on the River Siret, the Linear Pottery stratum yielded two radiocarbon dates: Bln-801, 6245 ± 100 BP (5310-5035 BC) and Bln-800, 6190 ± 100 BP (5280-4980 BC), indicating the end of the 6th millennium BC (52nd through 51st centuries BC).

			Half-life		
	Site	Lab. No.	5568 BP	5730 BP	CRD 1 σ BC
01	Poduri, charcoal (Pre-Cucuteni II)	Bln-2804	5820±50	5985	4730-4550
02	Poduri, grain (Pre-Cucuteni III)	Bln-2803	5880±150	6050	5040-4555
03	Poduri, charcoal (Pre-Cucuteni III)	Bln-2782	5780±50	5945	4750-4560
04	Novye Rusehty I, charcoal (Pre-Cucuteni III-Tripolye *A*)	Bln-590	5565±100	5720	4545-4365
05	Tîrpeşti I, charcoal (Pre-Cucuteni III-Cucuteni A_1)	GrN-4424	5540±85	5700	4540-4345
06	Poduri, charcoal (Cucuteni A_1)	Bln-2783	5690±50	5855	4570-4435
07	Poduri, charcoal (Cucuteni A_1)	Bln-2784	5680±60	5845	4565-4435
08	Margineni, charcoal (Cucuteni A_2)	Bln-1536	5625±50	5780	4555-4415
09	Margineni, grain (Cucuteni A_2)	Bln-1534	5610±55	5770	4550-4415
10	Margineni, grain (Cucuteni A_2)	Bln-1535	5485±60	5635	4430-4330
11	Poduri, charcoal (Cucuteni A_2)	Bln-2802	5420±150	5575	4435-3945
12	Poduri, charcoal (Cucuteni A_2)	Bln-2766	5350±80	5505	4400-3920
13	Leca-Ungureni, grain (Cucuteni A_3)	Bln-795	5345±100	5495	4395-3910
14	Hăbăşeşti, charcoal (Cucuteni A_3)	GrN-1985	5330±80	5485	4390-3910
15	Polivanov Yar, charcoal (Tripolye *B*)	GrN-5134	5440±70	5595	4420-4115
16	Draguşeni, charcoal (Cucuteni A_4)	Bln-1060	5355±100	5505	4400-3920
17	Luka-Vrublevetskaya, bone (Tripolye *A*)	UCLA-1642C	5160±60	5310	3985-3865
18	Krasnostavka, charcoal (Tripolye B_1)	Ki-882	5310±160	5460	4400-3890
19	Klishchiv, charcoal (Tripolye B_2)	LE-1060	5100±50	5245	3940-3790
20	Novorozanivka II, ch. (Tripolye C_1)	UCLA-1642F	4915±300	5050	3970-3365
21	Valea Lupului, grain (Cucuteni B_1 or B_2)	GrN-1982	4950± 60	5090	3875-3660
22	Soroki-Ozero (Tripolye C_1)	BM-495	4940±105	5080	3880-3650
23	Soroki-Ozero (Tripolye C_1)	BM-494	4792±105	4925	3680-3490
24	Evminki, bone (Tripolye C_1)	UCLA-1671B	4890±60	5030	3900-3645
25	Chapaevka, bone (Tripolye C_1)	Bln-631	4870±100	5010	3805-3530
26	Evminki, bone (Tripolye C_1)	UCLA-1466B	4790±100	4925	3680-3490

Table 5: Cucuteni Radiocarbon Sequence

A Pre-Cucuteni II (Tripolye A_1) radiocarbon date has been obtained from the shrine of Poduri "Dealul Ghîndaru," district of Bacău: Bln-2804, 5820 ± 50 BP (4750-4560 BC). The Pre-Cucuteni III (Tripolye A_2) stratum above the shrine yielded the date: Bln-2803, 5880 ± 150 BP (5040-4555 BC). The succeeding layer, assigned to the transition between the Pre-Cucuteni and Cucuteni *A* periods, yielded a slightly later date: Bln-2782, 5780 ± 50 BP (4730-4550 BC) (Monali *et al.* 1986; Monali 1987). In calibrated chronology all three should be placed within the 48th through 46th centuries BC. The animal bone date from Luka Vrublevetskaya, a Tripolye *A* site, is obviously too late. Tîrpeşti date GrN- 4424 is synchronous with Novye Ruseshty I, – a Tripolye *A* settlement. This Tîrpeşti sample was described by Dumitrescu as being either "Pre-Cucuteni" III or Cucuteni A_1-A_2.

Typologically, Pre-Cucuteni is contemporary with middle and late Boian and early Gumelniţa of southern Romania:

Pre-Cucuteni III Gumelniţa A_1-A_2 Boian 5 (late Spanţov)
Pre-Cucuteni II Boian 4 (Vidra, early Spanţov)
Pre-Cucuteni I Boian 3 (Giuleşti)

The radiocarbon dates for Karanovo V and early Karanovo VI (Boian-early Gumelniţa) place the Early Cucuteni between *c.* 5100 and 4600 BC (*cf.* Ehrich and Bankoff 1992).

Table 6 lists the sites in order of stratigraphy and typology, with their radiocarbon dates.

The Classical period is the best dated. The five phases (Cucuteni A_1, A_2, A_3, A_4, AB_1) belong in the period between the 46th and the 40th centuries BC, each phase lasting *c.* 140 years.

Cucuteni A_3: 44th-43rd centuries BC
Cucuteni A_2: 45th-44th centuries BC
Cucuteni A_1: 46th-45th centuries BC

The Late Cucuteni phases belong in the period between the 39th and 34th centuries.

Simplified Classification and Relative Chronology

For the nonspecialist, I propose a simplified version of chronological classification:

III. *Late Cucuteni* (Cucuteni *B*, Tripolye C_1), *c.* 4000-3400 BC
II. *Middle or Classical Cucuteni* (Cucuteni *A* and *AB*, Tripolye *B*) *c.* 4600-4000 BC
I. *Early Cucuteni* (Pre-Cucuteni, Tripolye *A*) *c.* 5100-4600 BC

Site Name and Phase	Range of Calibrated Dates
Late Cucuteni	
15. Evminki: (Tripolye *CI*)	3875-3395 BC
	3855-3360 BC
Chapaevka: (Tripolye *CI*)	3885-3375 BC
14. None	
13. Novorozanivka: (Tripolye *CI*)	4350-3070 BC
12. No dates	
11. Valea Lupului: (Cucuteni B_2)	3895-3640 BC
10-9. No radiocarbon dates	
Classical Cucuteni	
8. Klishchiv: (Cucuteni *AB*, Tripolye *B*II)	4105-3675 BC
7. Draguşeni: (Cucuteni A_4)	4420-3880 BC
6. Hăbăşeşti: (Cucuteni A_3)	4415-3875 BC
5. Polivanov Yar III: (Tripolye B_1)	4430-3945 BC
Margineni: (Cucuteni A_2)	4520-3980 BC
	4560-4390 BC
	4560-4395 BC
4. N. Ruseshty: (Cucuteni A_1)	4560-4115 BC
Early Cucuteni	
3. Poduri: (Pre-Cucuteni III)	4750-4560 BC
2. Poduri: (Pre-Cucuteni III)	5040-4555 BC
1. Poduri: (Pre-Cucuteni II)	4730-4550 BC

Table 6: Distribution of Radiocarbon Dates according to Phases Based on Stratigraphy

The three main periods, I-III, coincide with the three stages of ceramic styles as well as with the three periods of evolutionary development of Cucuteni.

Early Cucuteni is characterized by excised, white encrusted ceramics, closely analogous to the Boian ware of southern Romania. The earliest bichrome pottery, a red-and white-painted ware, points to the beginning of the Classical Cucuteni. This was soon succeeded by trichrome wares, painted white or red with black bordering, which mark the apex of Classical Cucuteni ceramic art (Cucuteni A_2, A_3). Vases, painted dark brown on orange-red, and pictorial representations of mythical images, are typical of Late Cucuteni (Fig. 2).

A steady population increase is indicated by the size of villages which grew from *c.* 30-40 houses in the Early Cucuteni to 100-200 houses in the early Classical, and to 1,500 at the beginning of Late Cucuteni (Dobrovody, Maidanetske, Tallyanki, and other towns) (Shmaglii, Dudkin, and Zin'kov'skii 1973; Shishkin 1973). Late Cucuteni is an urban stage. Site territories covered up to four hundred hectares.

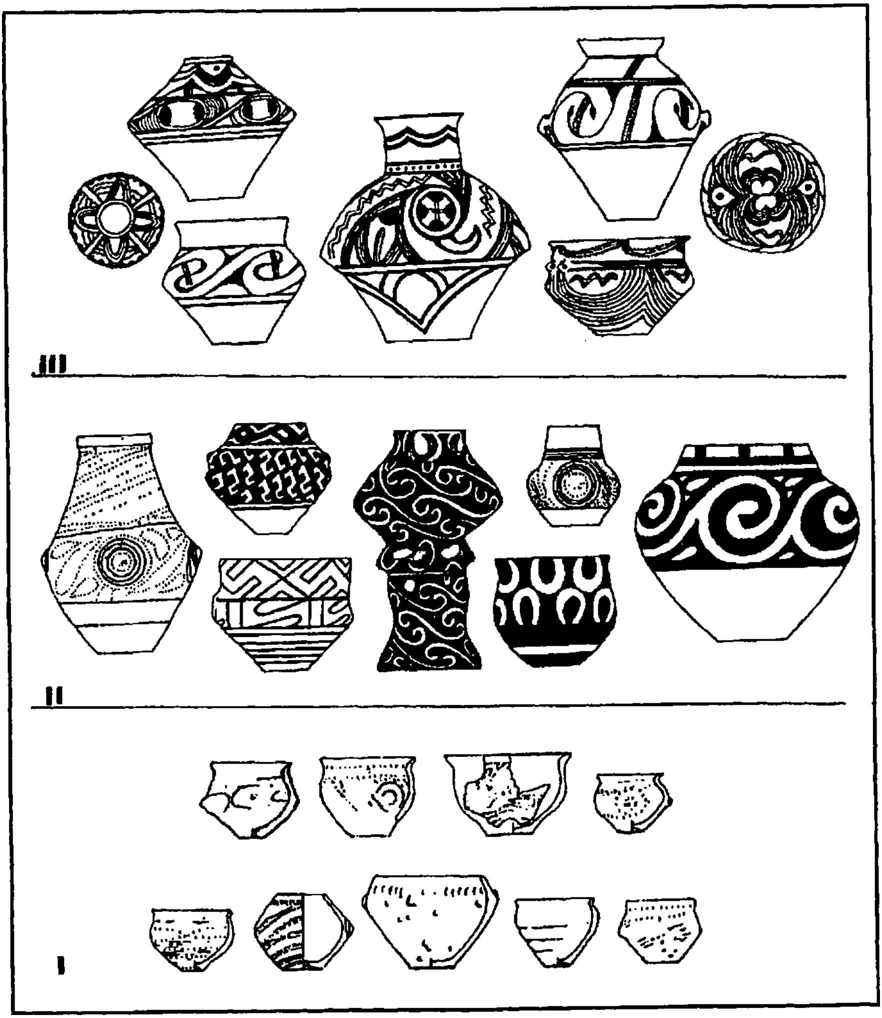


Fig. 2: Simplified Cucuteni pottery typology: I) Early (excised, white encrusted); II) Middle (bichrome, trichrome painted); III) Late (brown/black on orange-red, painted.

Villages and towns were founded on river terraces – Early Cucuteni, occasionally on low ones; Classical and Late Cucuteni always on wide, secondary terraces. One or two ditches and a rampart protected the village on the inland side. Architecture shows a development from modest, somewhat flimsy huts in Early Cucuteni to three or four-room houses and two-storied buildings in the Classical and Late Cucuteni. The houses ranged from 8 to 30 meters in length, large enough for twenty to thirty people. The interior was divided by partitions into two or three rooms, each with a hearth and a clay oven. Walls of wicker work up to 2 meters high, supported by vertical beams and daubed with clay, were built above a specially prepared wood or clay platform, over which was superimposed a fired, clay floor. A pitched roof was supported by a longitudinal row of posts.

Latest Cucuteni (Tripolye CII) is a period of dissolution for the Cucuteni culture, one caused by the increasing pressure from the steppe during the Mikhajlovka I phase of the North Pontic Maikop culture and the infiltration of the Funnel-necked Beaker culture of northwestern Europe as far east as the Dniester basin and Volynia (Movsha 1985).

The Neolithic and Eneolithic of the Middle Volga-Southern Urals Region

The Neolithic

Recent work in the forest-steppe and the northern edge of the steppe between the middle Volga and lower Ural suggests early beginnings of the Neolithic economy there. About fifteen sites yielded domestic fauna. Of these, horses (55.3 percent) predominate, followed by cattle (27.6 percent), and ovicaprids (17 percent). The morphology and the age-slaughter pattern of the horses from Vilovatoe and Mullino II indicate domestic horses. Petrenko hypothesizes that from this earliest stage of horse domestication the horse was exploited for meat and for riding (Petrenko 1984:70-71). The radiocarbon dates are 5720 ± 160 b.c. from Mullino II and 5600 ± 200 b.c. from Berezki (Matyushin 1982; Petrenko 1984). The calibration would place them in the second half of the 7th millennium BC. This shows that the Neolithic of the Volga-Urals is as early as the Aegean Neolithic and that it predates the North Pontic Neolithic. The Near East must have been the source of this economy, except for the horse which most likely was domesticated in the middle Volga forest-steppe region, at the forest edges and close to the rivers. The presence of the domesticated horse in the 7th millennium BC, not suspected heretofore, is of the greatest significance for the understanding of the following cultural development of south Russia. The Volga-Urals culture referred to as "Eneolithic" in Soviet literature developed from the Neolithic culture in the same territory between the middle Volga and the lower Ural and extending to the Caucasus Mountains and the Caspian Sea in the south. The Eneolithic is subdivided into three periods: early (or "Samara"), middle (or "Khvalynsk"), and late (or "early Yamna") (Vasil'ev 1981).

The Early Eneolithic Samara Culture

The early Eneolithic is called the "Samara culture." The name derives from the cemetery of S'ezzhee on the bank of River Samara, the tributary of middle Volga, district of Kuybyshev (Vasil'ev and Matveeva 1976). This cemetery revealed the earliest evidence of the horse cult: remains of horse sacrifices and miniature figurines of horses carved out of bone plate (Fig. 3). A large sacrificial area in which two skulls of horses were found was above the richest graves in pits. Graves were intensively sprinkled with ochre. A child's grave in a deep pit below the sacrificial remains was equipped with the long flint dagger of an adult person (Fig. 4/1), two figurines of double-headed oxen or bulls made of boar's tusk (Fig. 3/3, 4), three spoon-shaped objects with sculptured heads of ducks at ends, laminae and pendants of shell, a necklace of shell beads, animal teeth, and two large polished gouges and adzes of stone. The unusually rich grave gifts, some of which clearly had a symbolic meaning (the weapons and tools of an adult person in the grave of a child of one and a half to two years old, as well as the figurines), suggest a ritual burial. Flint and bone daggers of this cemetery are truly formidable weapons (Fig. 4). Some of the bone daggers with flint or quartzite blades set in along both sides were as long as 56 cm. Such weapons are not known to the world west of south Russia. Pots from the sacrificial areas were tempered with crushed shells. The predominant shape was a truncated egg (Fig. 5). The decoration was in horizontal bands or zigzag lines over the upper part or over the whole surface, executed by stabbing, stamping, comb impressions, and by pitted or button design below the thickened rim. Similar pottery is known from a number of sites between the lower Don on the west, the middle Volga in the north, and the lower Ural region in the east.

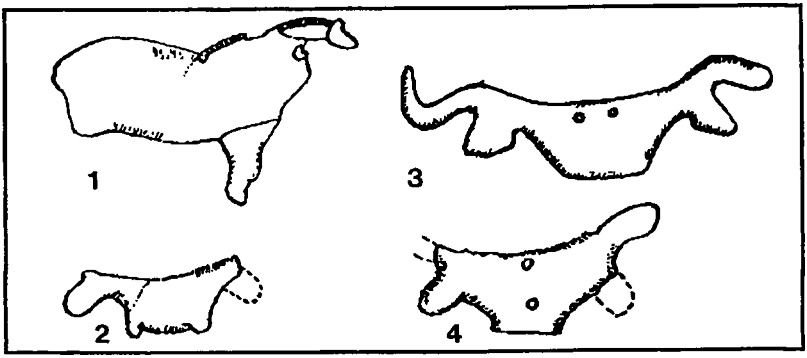


Fig. 3: 1) Horse, 2) double-headed horse, 3) and 4) double-headed oxen figurines and pendants carved out of bone. S'ezzhee cemetery, on the bank of R. Samara, tributary of R. Volga. Samara (Early Eneolithic) period of the Volga forest-steppe c. 5000 BC. (*After* Vasil'ev and Matveeva 1976.)

There are no radiocarbon dates for the S'ezzhee cemetery. The chronology rests on stratigraphy and typological comparisons. It precedes the Khvalynsk period, dated by radiocarbon to the first half of the 5th millennium BC. The hypothetical date for the Samara period is the end of the 6th millennium BC, or the period around 5000 BC.

The Middle Eneolithic Khvalynsk Culture

The middle period of the Eneolithic is represented by the cemetery of Khvalynsk, located on the bank of the Volga, district of Saratov (Agapov, Vasil'ev, and Pestrikova 1979; Vasil'ev 1981:22-42). One hundred fifty-eight skeletons were unearthed in pit graves; the skeletons were buried singly or there were from two to five or more in one grave. The dead were placed lying on the back with contracted legs and knees upward. Twelve graves were covered with stone cairns. As in S'ezzhee, sacrificial areas were unearthed with remains of horse, cattle, and sheep bones. Grave goods included metal artifacts (rings and spirial rings), pendants of boar's tusk, bone and shell beads and bracelets, a shaft-hole ax with side lugs, a sculpture of a schematized head of a horse, probably a scepter, bifacially retouched flint points, arrowheads, daggers, stone adzes, and bone harpoons. A very similar inventory was brought to light in the rich grave of an individual discovered in 1929 at Krivoluchie, district of Samara (Gol'msten 1931) (Fig. 6). In the south, related burial rituals and grave equipment came to light at Nal'chik, in the region of Kabardino-Balkaria, central northern Caucasus (Kruglov, Piotrovsky, and Podgaetsky 1941). Furthermore, related materials are known from sites to the Sea of Azov on the

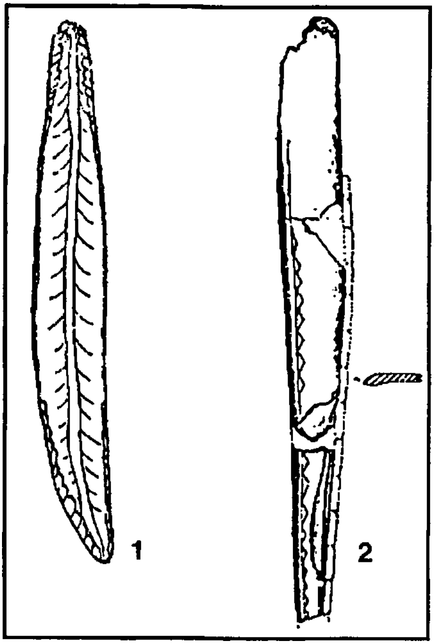


Fig. 4: Flint and bone daggers from the cemetery of S'ezzhee, *c.* 5000 BC: 1) flint dagger found in child's grave associated with horse sacrifice is 18 cm. long; 2) bone dagger is *c.* 40 cm. (*After* Vasil'ev and Matveeva 1976.)

west and the River Ural on the east. The similarity of grave goods in sites separated by thousands of kilometers suggests an unprecedented mobility and intertribal relationship.

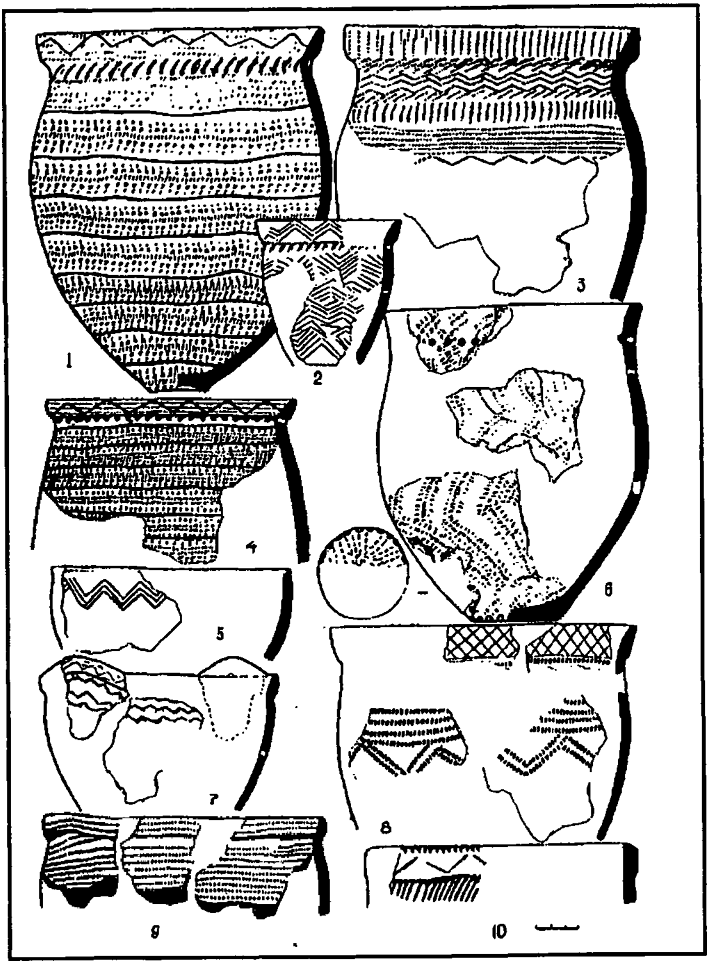


Fig. 5: Pottery from the cemetery of S'ezzhee (from the horse sacrifice area). Pots were tempered with crushed shell, c. 5000 BC. (*After* Vasil'ev and Matveeva 1976.)

The radiocarbon dates for the Khvalynsk period are from the early 4th millennium b.c. (analyzed by the Laboratory of the Ural Institute of Education). Calibrated, they belong to a period before the middle of the 5th millennium BC (Vasil'ev 1981:63). Dates themselves are not published by Vasil'ev. He also mentions that samples analyzed in Kiev are even higher.

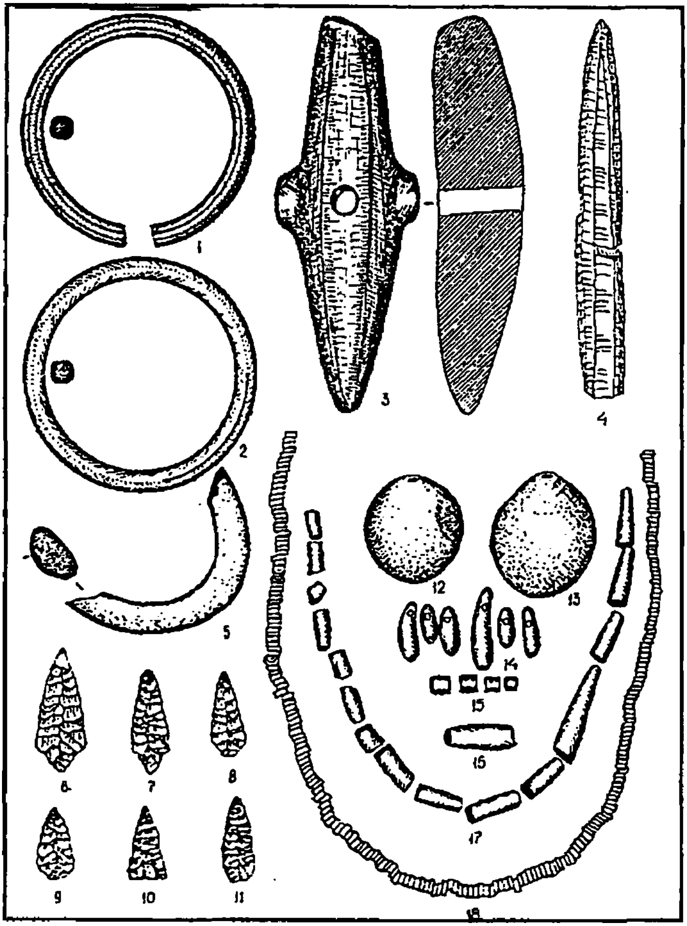


Fig. 6: A rich inventory of a man's grave from the Khvalynsk period, Krivoluchie, district of Samara: 1, 2, 5) bracelets of shell; of stone; 4) flint dagger; 6-11) flint arrowheads; 12-18) pendants and beads of shell and deer teeth. First half of the 5th millennium. (*After* Gol'msten 1931.)

The Late Eneolithic Early Yamna Culture

In the late Eneolithic the early Yamna culture appears and is characterized by a wide spread of kurgans, low earthen barrows above pit graves. Before this period earthen mounds were not universal; more often graves were covered by a stone cairn or remains of sacrificial activities. On the steppe, earthen mounds above the graves emerged during the Khvalynsk period. The kurgan is a feature of the steppe (Merpert 1974:131). In all respects the late Eneolithic is a continuation from the Khvalynsk period. The continuity of the material culture is best documented by excavations in the same areas where Khvalynsk sites existed previously, for instance, by the excavation of a settlement of Alekseevo near Khvalynsk (Vasil'ev 1981:44-50). Continued in production were the egg-shaped pots tempered with crushed shell and the stone tool kit dominated by gouges and adzes and typical weapons – bifacially retouched spear points and arrowheads and long daggers. The type site is Repin on the bank of the lower Don (Sinitsyn 1957:32-35). This settlement yielded the greatest number of pots and horse bones. Horse bones constituted 80 percent of all domesticated animal bones.

This is a period of rising mobility. Contacts with the west, with the Cucuteni and the Karanovo VI cultures, place it in the middle of the 5th millennium BC or soon thereafter.

The swift horse cut traveling time by a factor of five, nullifying whatever territorial boundaries had existed previously. These developments largely affected the exploitation of steppe resources and virtually all other aspects of life. Riding provided the ability to strike across great distances and instigated trading capacities, the accumulation of wealth, the looting of cattle and horses, a rapid rise of social differences, and warfare and violence. Once the steppe was conquered, it inevitably became a source of out-migration.

The Kurgan Culture

Kurgan (a term introduced by the author in 1956) is the archaeological blanket term for the seminomadic pastoralists from the south Russian steppelands. The Russian word *kurgan* (itself a Turkic loanword) means literally a "barrow"; hence, the technical term *Kurgan* refers to the tumuli which are a characteristic feature of the burial practices of a culture, and is extended to designate the people of that culture as well. Chronologically, the term is applicable to a time span comprising two millennia, from *c.* 4500 to *c.* 2500 BC. This period saw three Kurgan thrusts into east-central Europe: at *c.* 4400-4200 BC, at *c.* 3600-3400 BC, and at *c.* 3000-2800 BC.

The "Kurgan tradition" is characterized by an economy, essentially pastoral with subsidiary agriculture; by a patriarchal and hierarchial society with prominent hillforts as tribal centers; by small, transient villages of semi-subterranean houses; by horsemanship; by distinctive burial rites including hutlike structures built of stone or wood, covered either by a cairn or an earthen mound; and by horse and weapon cults and sun-oriented symbolism.

I divide this tradition into four periods, Kurgan I-IV (Table 7). This chronology, based on contacts with the west, radiocarbon dates, stratigraphy, and typology, does not represent the evolution of a single group of people, but rather several groups of steppe peoples differing spatially and diachronically but sharing a common tradition. Kurgan I and II people were from the Volga forest-steppe and steppe; Kurgan III (Mikhajlovka I-Maikop), developed in the north Pontic area influenced by the Caucasian and Mesopotamian cultures; and Kurgan IV (Yamna) people were again from the Volga steppe (Table 7).

Approximate Date	Pontic Steppe	West of the Black Sea, Danubian Basin,	Central Europe
4500	*Kurgan I:* Early Yamna in the lower Volga basin; Srednij Stog II in the lower Dnieper region	*Kurgan Wave No. 1:* *c.* 4400-4200 BC	
		Cucuteni A_3	(Moldavia)
		Karanovo VI	(Bulgaria)
4000		Cucuteni *AB, B*	
	Kurgan II: Late Srednij Stog II		
		Cernavoda I	(Dobruja)
3500		*Kurgan Wave No. 2:* *c.* 3400-3200 BC	
		Usatovo and Gorodsk in the W. Ukraine (Tripolye CII); "Folteşti" in Moldavia	
		Cernavoda II in Dobruja	
	Kurgan III: Maikop culture, Mikhajlovka I phase	Coţofeni in Oltenia and Transylvania	
		Baden in mid-Danube basin,	
		Ezero in Central Bulgaria	
		Globular Amphora in central Europe	
	Kurgan IV: Yamna and Catacomb grave	*Kurgan Wave No. 3:* *c.* 3000-2800 BC	
		Corded Pottery (Common European Horizon)	
		Vučedol (W. Yugoslavia, Hungary, E. Austria, Bohemia)	

Table 7: Kurgan (Srednij Stog II, Mikhajlovka I, and Yamna) Chronology Based on Contacts with East-Central Europe

Kurgan I: First Wave into East-Central Europe

The Kurgan people first entered European prehistory in the mid 5th millennium BC when they appeared in east-central Europe. The chronology is built on contacts with Cucuteni A_3 and Karanovo VI. The lower Dnieper basin (the Dnieper-Donets culture) was infiltrated before the middle of the 5th millennium BC. The Dnieper-Donets culture was gradually replaced by a Kurgan culture, called "Srednij Stog II" (SS II).

In the Dnieper rapids region a stratified site with an earlier Dnieper-Donets settlement, Srednij Stog I, is overlain by a new cultural complex, Srednij Stog II, whose people practiced single burial in flat or in cairn-covered shaft or cist graves; the body was supine, either contracted or extended, and usually supplied with flint daggers and beakers with pointed bases. In contrast to the vegetal temper characteristic of the earlier Dnieper-Donets ceramics, the pots are tempered with crushed shell; the stamped pitted or cord-impressed decoration about the neck and shoulders presents a solar motif (Fig. 7). The skeletal remains, moreover, are dolichomesocranial, taller statured, and of a more gracile physical type than those of their predecessors in the substratum (Zinevich and Kruts 1968). Local evolution cannot account for such abrupt changes; our task, then, is to seek neighboring cultures typologically similar to SS II for a possible source of this contrasting stratum. Such a parent culture is to be found in the steppe region of the lower Volga and lower Urals of the Khvalynsk period of the first half of the 5th millennium BC. The earliest SS II sites in the lower Dnieper basin may date from a period earlier than the middle of the 5th millennium BC; the rest are contemporary with the early Yamna period.

[For figure see Fig. 14/1 and 2, p. 212 below.]

Fig. 7: Kurgan I (Srednij Stog II) beakers, decorated with stabbings forming a solar design when viewed from the top 1) Domotkan'; 2) Mayorka, lower Dnieper steppe. (*After* Telegin 1973.)

The Srednij Stog II complex is an extension of the Volga-Ural pastoralists into the north Pontic. The hundred or so sites in the lower Dnieper-Don interfluve are primarily cemeteries. Settlements are found on high and wide riverbanks. Such was excavated at Liventsivka I on the lower Don at the confluence with Mertvii Dinets near the town of Rostov-na-Donu (Bratchenko 1969). This hilltop settlement yielded a stratigraphy of five superimposed cultural layers. The lowest (earliest) layer included Srednij Stog II pottery.

In graves, the typical skeletal disposition is supine, legs flexed or extended, arms alongside the body, the whole dusted with ochre. The grave pits are rectangular, retaining traces of bark floor-covering. The grave goods show the influence of the local substratum and are enriched by trade objects from the west (Telegin 1973). High-class male burials included bifacially worked spearpoints, triangular flint arrowheads, and formidable long flint daggers, usable on horseback (Fig. 8). Exceptionally rich male graves include thousands of *pectunculus* or other shells (originally attached to disintegrated leather or woven belts); copper bead and animal tooth necklaces; shell and copper pendants; spiral arm rings and finger rings of copper; long, thin, spiral-headed copper pins; and copper tubes. The copper came from the Ai-bunar or other mines in central Bulgaria of the Karanovo VI period via barter with the Cucuteni people (of the Cucuteni $A_{3\text{-}4}$ period).

[For figure see Fig. 1/8, 10, and 12, p. 244 below.]

Fig. 8: Typical flint weapons of Kurgan I (Srednij Stog II) chieftain/warrior: 1) dagger; 2) halberd blade; 3) arrowhead (up to fifteen in one grave), Petro-Svistunovo, lower Dnieper, 44th-43rd centuries BC. (*After* Telegin 1973.)

Antler cheek pieces and the depiction of bridle equipment on stone sculptures is fairly convincing proof of horsemanship. At Dereivka, in the lower Dnieper steppe, fifty-five horses were counted within a settlement of three dwellings, representing 68 percent of the total number of domesticated animal remains. The radiocarbon dates for the Dereivka settlement are as follows:

Lab. No.	**Reported Date BP**	**CRD 1 σ BC**
UCLA-1466A	5515 ± 90	4450-4335 BC
UCLA-1671A	4900 ± 100	3865-3550 BC

Following the penetration of the Dnieper rapids region, Kurgan incursions struck Romania, Bulgaria, and east Hungary. We can trace the spread of the domesticated horse from the Volga steppe north of the Caucasus Mountains to east-central Europe by antler cheek pieces, stylized horse-head sculptures, by actual horse bones, and by remains of horse sacrifice.

In nine of the western Kurgan I burials (Fedeleşeni, and Berezivka, Moldavia; Obirşeni and Salcuţa IV, southern Romania; Székelyvaja, Transylvania; Casimcea and Suvorovo in Dobrudja; Rzhevo, Bulgaria; and Suvodol, Macedonia), stone scepters in the shape of a horse-head analogous to those from Kuybyshev on the Volga, Arkhara in the northern Caucasian steppe, and Terekli-Makhteb in northern Dagestan were found (Gimbutas 1977:fig. 11). On the basis of stratigraphic and typological evidence from Obirşeni, Fedeleşeni, and Berezivka, the scepters are dated to the Cucuteni $A_{3\text{-}4}$ (Tripolye B_1) period: 44th to 43rd centuries BC. The Casimcea burial also yielded, besides a scepter, several axeheads, spearpoints, and flint daggers of the type found in SS II graves. The Suvorovo burial, classified as a "*suttee*" grave, has close parallels in the SS II sites of Yama and Aleksandriya in the lower Dnieper region. Luxurious grave goods such as copper rings, bracelets, and pendants of Karanovo VI type, shell artifacts made from *spondylus* imported from the Aegean, and daggers made of Carpathian obsidian or flint were found west of the Black Sea in the sites of Casimcea in Dobrudja and Czongrad in Hungary. Close parallels are known from the SS II sites of Petro-Svistunovo and Chapli in the lower Dnieper region. In addition, the Kurgan at Kainari, Moldavia, included grave goods synchronous with Cucuteni A_3: 44th through 43rd centuries BC (Movsha 1972:16-17).

Domestic horse bones appeared in the Gumelniţa (Karanovo VI), Cucuteni A_3, and Tiszapolgár (northeastern Hungary and Moravia) sites with Kurgan Wave Number 1 (Bökönyi 1978:25ff; 1987). The evidence for a horse sacrifice – a horse skull cut from the neck – was found in a Tiszapolgár pit in Tiszaföldvár, northeastern Hungary (Bökönyi 1987).

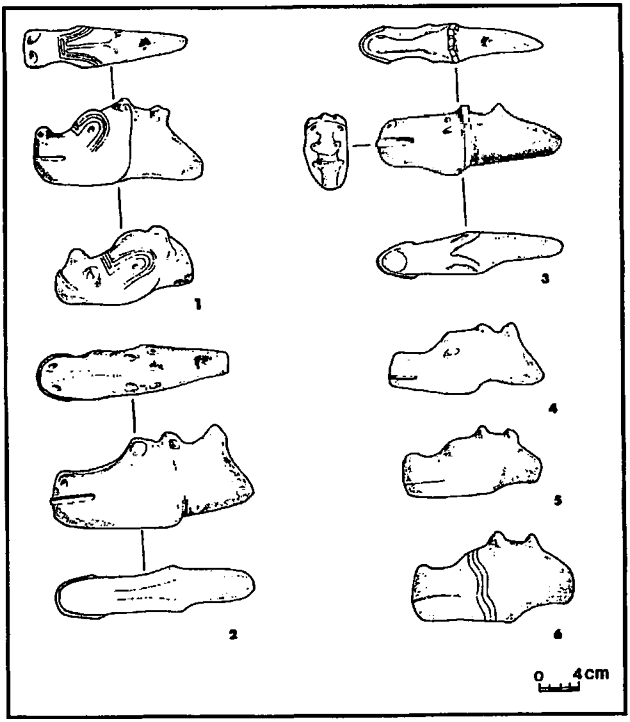


Fig. 9: Horse-head scepters of semi-precious stone from northeast Caucasus and west of the Black Sea: 1) Casimcea, Dobruja, eastern Romania; 2) Terekli-Mekhteb, northern Dagestan, northeastern Caucasus; 3) Suvorovo on the lower Danube, Moldavian SSR; 4) Fedeleşeni, Moldavia, northeastern Romania; 5) Rzhevo, central Bulgaria; 6) Salcuţa, southwestern Romania. (*After* Danilenko and Shmagliy 1972.)

Kurgan II

This period is late Srednij Stog II in the lower Dnieper basin, contemporary with Cucuteni *AB-B*$_1$ (Tripolye *B*II-*CI*) around 4000 BC – early 4th millennium BC. Along the western coast of the Black Sea, in Dobrudja, Cernavoda I culture emerged, typified by fortified sites on high river terraces, subterranean dwellings, and gray crushed-shell tempered pottery, unmistakably related to the Kurgan wares.

The Cucuteni civilization survived the first Kurgan Wave intact. Its ceramic tradition continued undisturbed, although Kurgan elements within Cucuteni settlements (1-10 percent of Cucuteni *A* and *AB* pottery) indicate some sort of interaction between the two groups. This intrusive shell-tempered pottery (referred to by some as "Cucuteni *C*") is identical to that of the SS II sites of the lower Dnieper. Petrographic analysis showed that all Cucuteni and SS II samples were of similar mineralogical composition. This indicates that both peoples exploited similar clay types, but the respective technology was very different: the Cucuteni ware was well fired, completely oxidized, and with no temper, whereas the Srednij Stog II ceramics were low-fired and contained tremendous quantities of crushed shell, organic residues, and plant material. The SS II pottery was fired in a reducing atmosphere at a temperature of approximately 500°-600°C. The possible firing temperature of Cucuteni *A* and *B* ceramics on the other hand lies between 850° and 1000° (analysis by Linda Ellis: Ellis 1984).

The density of Cucuteni sites indicates no massive dislocations in the wake of the First Wave of relatively small groups of Kurgan infiltrators; nor is there evidence for an amalgam of the two groups throughout these six hundred to eight hundred years of coexistence, at least not until the mid 4th millennium BC.

Kurgan III

The Mikhajlovka I Phase of the Maikop Culture North of the Black Sea and the Caucasus

This period is synchronous with the transformation in central Europe from agricultural to pastoral/agricultural economy, from a society matricentric and matrilineal to a patriarchal one (as reflected by Ezero-Baden and Globular Amphora cultures) accomplished by the first and subsequently the second infiltration into east Europe of peoples from north of the Black Sea (Gimbutas 1979, 1980). The Old European copper metallurgy was replaced now by circumpontic metallurgy related to the Caucasus and the Near East (Chernykh 1980).

The home base of the Second Kurgan Wave is the remnants of hillforts and the hundreds of kurgans with cromlechs and mortuary houses in pits built of stone slabs, stones, or wood (Fig. 10) that are concentrated north of the Caucasus and the Black Sea: in the Crimea, the lower Don, lower Dnieper, Ingul, and Ingulets valleys. Royal or other important male burials share a characteristic monumental style: tumuli are surrounded by stones or orthostats, then by an outermost ring of stones, and under the kurgan is a stone- or wood-lined pit, sometimes topped by a stone cupola or earthen mound covered with stones. In the grave goods we find evidence of vehicles, silver spirals, and daggers of arsenic copper. Associated with burials are sacrifices of oxen and horses. Skulls of these animals were placed in pairs (two ox skulls, two horse skulls). The central grave of one kurgan (no. 4) at Novoalekseevka, district of Kherson, was surrounded with a ring of ox skulls and leg bones. The skulls were laid in pairs. In another kurgan (no. 6), two ox skulls with the foreheads touching each other were placed at the feet of a child under which lay a skeleton of an adult. Children's and youths' burials associated with oxen and

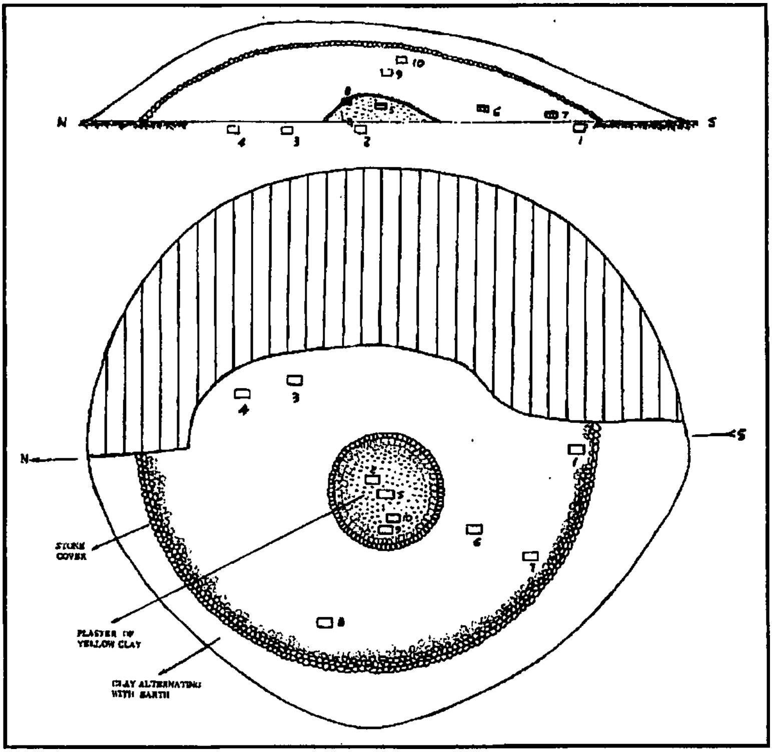


Fig. 10: A classical example of the Kurgan III (Wave No. 2 to east-central Europe) period. Cross section and plan of the "Tsareva Mogila" kurgan at Kherson, northwest of the Black Sea. Grave No. 2 is the earliest grave for which the inner and outer tumulus was built. Other graves are of subsequent periods. (*After* Gimbutas 1965.)

horse sacrifices could have been sacrificial. Thus, for instance, in grave number 14 of the same kurgan a skeleton of a youth was found between the two skulls of horses (Zbenovich and Chernenko 1973).

Large apsidal houses (with apsis used for storage), exclusively on hilltops, are an architectural innovation. The features spread now over western Anatolia (Troy I-II), northeastern Greece (Sitagroi V), Bulgaria, and Romania (Ezero culture), northwestern Yugoslavia, eastern Hungary, and Slovakia (Baden culture), and Poland, eastern Germany, and northeastern Romania (Globular Amphora culture). Moreover, apsidal houses, probably not unconnected with east-central European, emerged in Palestine during the 34th through 33rd centuries BC (Best 1976).

Typical royal burials are known from Tarnava, northwestern Bulgaria (Nikolov 1976). To the same tradition, though of a later date, belong the Mala Gruda royal grave at Tivat on the Adriatic coast and other related graves in

Hercegovina (Govedarica 1987) as well as the Steno tumuli on the island of Leukas, west of Greece, assigned to the Early Helladic II period (Dörpfeld 1927).

Known from the end of the 19th century, the royal tomb at Maikop in the northwestern Caucasus is the richest and the most familiar of this culture. And although it dates from the first half of the 3rd millennium BC (contemporary with Troy II and Early Helladic II) – thus to the later part of the culture – the place-name has become eponymous for the whole north Pontic culture which began soon after the middle of the 4th millennium BC. The beginning phase of the Maikop culture is best represented by the lowest layer of the Mikhajlovka hillfort in the lower Dnieper basin (Lagodovska, Shaposhnikova, and Makarevich 1962).

The Mikhajlovka hillfort on R. Pidpil'na, a tributary of the lower Dnieper, was undoubtedly a strategic Kurgan center. The finds from its lowest horizon, Mikhajlovka I, show affinities with those from Crimean and north Caucasian stone cists on the one hand and with the Usatovo kurgans near Odessa on the other. The chronology of this phase is based on radiocarbon dates from Mikhajlovka I:

Lab. No.	**Reported Date BP**	**CRD 1 σ BC**
Bln-629	4400 ± 100	3360-2910
Le-645	4340 ± 65	3160-2900
Bln-630	4330 ± 100	3170-2885

The two upper layers of Mikhajlovka belong to the Yamna culture of Volga origin.

Mikhajlovka I ceramics are typified by the globular amphorae with rounded or flat base and cylindrical neck wound with cord impressions; semi-globular tureens and braziers also occur. Some vases were stabbed, pitted, and beaded about the mouth, neck, and shoulder (Fig. 11). Four-legged braziers were ornamented with the solar motif. The ceramic was tempered with crushed shell or limestone and sand, usually of grey color and with a well-polished surface. Parallels are known from the northern and central Caucasus, and from the Kuro-Araks basin in Transcaucasia (stratum E in Khizanaant Gora and in Amiranis Gora: Kushnareva and Chubinishvili 1970:fig. 21:6).

In the lower Dnieper basin, on both sides of the river, kurgans with several kinds of burial rituals were found, but considered to be roughly contemporary. In addition to the diagnostic burial in grave pits covered with stone slabs and surrounded with one or two stone rings, in a number of kurgans, graves were found in oval, boat-shaped, or rectangular pits, including extended skeletons (Nikolova and Rassamakin 1985). Their chronology is indicated by the deposition in graves of Cucuteni-Tripolye figurines of the Tripolye CI_1 period. The figurines were highly schematized, with no arms or legs, flat backs, and large faceless cylindrical heads marked with groups of parallel lines or tri-lines. This type is known as latest Tripolye, "Serezliivka" type (Passek 1949:fig.

98:11). Graves also yielded rounded or biconical pots, some with polished surface, and made of the same kind of clay as the figurines, with no temper of crushed shells. Such items in graves speak for the continuity of Tripolye traditions during the Mikhajlovka I period. These graves seem to represent the last flutter of the great culture before its merge with the Kurgans.

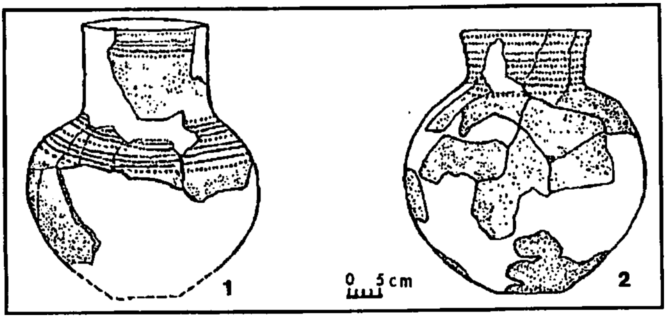


Fig. 11: Globular vases with cylindrical necks, decorated with cord impressions and stabbing. 1) Tsviklivtsi habitation site; 2) Mikhajlovka hillfort, layer I, c. 34th through 33rd century BC.

		Half-life		
Site	**Lab. No.**	**5568 BP**	**5730 BP**	**CRD 1 σ BC**
Danku	LE-1054	4600 ± 60	4730	3390-3345
Usatovo	UCLA-1642A	4300 ± 60	4425	3055-2885
Mayaki	Bln-629	4400 ± 100	4525	3360-2910
	UCLA-1642B	4375 ± 60	4495	3170-2915
	UCLA-1642G	4375 ± 60	4495	3170-2915
	LE	4340 ± 65	4465	3160-2960

Table 8: Radiocarbon Dates from the Usatovo-Gorodsk Sites Northwest of the Black Sea

Usatovo in the steppe region around Odessa, Gorodsk on R. Teterev, west of the middle Dnieper, and Folteşti I in Moldavia form a complex representing an amalgam of Kurgan and Cucuteni traditions. Kurgans line the highest ridges along the rivers of the area, with the best sites being located at Usatovo near Odessa (Lagodovska 1946, 1953) and Tudorovo in Moldavia (Melyukova 1962). Near the settlement and tumuli at Usatovo is a contemporaneous cemetery of the indigenous latest Cucuteni (Tripolye CII) culture: simple, unmarked pit graves, arranged in rows. Contrasting burial rites of the Cucuteni and Kurgan populations are paralleled by differences in their respective habitation sites. Cucuteni dwellings were on wide river terraces. The Kurgan people located their semi-subterranean dwellings on spurs, dunes, and steep hills along rivers. The houses at Gorodsk are typical: small, about 5 meters in length, and with a round hearth in the center (Passek 1949:194-275). Household goods are definitely not Cucutenian (Movsha 1970). Potsherds, recovered mainly from hearths, show a rough corded pottery, pitted and stabbed.

Table 8 lists the radiocarbon dates obtained by analyses of charcoal and animal bone from the Gorodsk, Danku, Usatovo, and Mayaki sites.

Kurgan IV

The Yamna ("Pit grave") Culture of the Volga-Dnieper Steppe

The Yamna pastoralists of the Volga steppe are related to Kurgan I (early Yamna) and are distinct from the Maikop complex. Their western thrust is identified by hundreds of graves in Romania, Bulgaria, Yugoslavia (south Banat), and eastern Hungary.

Diagnostic features of prominent male burials are deep pits; timber hut construction within the grave pit, roofed with oak or birch beams (Fig. 12); floor covering of mats, bast, or ashes; grave walls hung with rugs; predominant western orientation of the dead; and supine skeletal position with contracted legs (lateral in later graves). Ochre was scattered with the dead. Round and low barrows, usually no higher than one meter, were surrounded by stone rings or ditches. Stone cists and cromlechs, common in the north Pontic Mikhajlovka I complex, are not characteristic of Yamna grave architecture. Important males were equipped with a hammer-headed pin of bone or copper, a round copper plate, spiral hair-rings or earrings of silver or copper chains or necklaces of copper wire tubes and canine teeth, flint arrowheads, tanged daggers of arsenic copper or flint, awls, flat cooper axes, and stone "battle-axes." About 75 percent of Yamna graves had no grave goods.

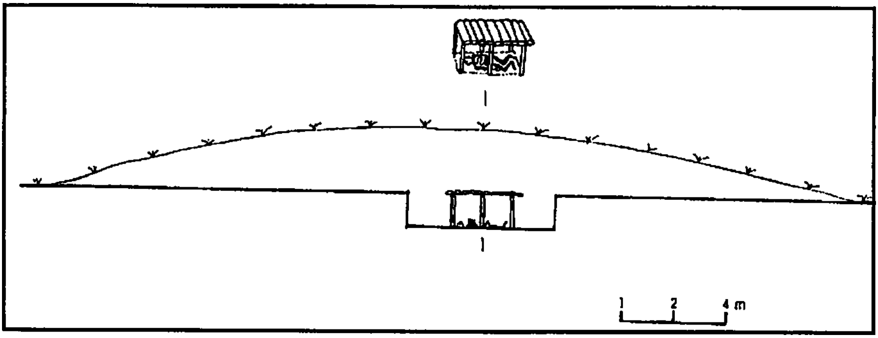


Fig. 12: Typical Yamna Kurgan with a pit grave. Cross section. Vojlovica at Pančevo, east of Belgrade. Early 3rd millennium BC. (*After* Jovanović 1976.)

The Mikhajlovka hillfort yielded the best stratigraphy: Mikhajlovka I was overlain, after a hiatus, by two layers (1.20 meters thick) of the Yamna culture, Mikhajlovka II and III. Tall beakers with rounded bases, decorated with horizontal cord impressions, comb-stamped herringbone design, rows of pits or incisions, and cord-impressed or incised hanging, and striated triangles are typical of the Yamna layers. This type of pottery is well evidenced in the Yamna graves in the lower Dnieper-lower Volga basins. The habitation area had been constantly enlarged. Final habitation of this hillfort extended over an area of 2 hectares. The fortification – ditches and stone walls of flat fieldstones, about 2 meters high – belongs to this last phase. Houses were rectangular, with stone foundations dug in the ground, consisting of two or three interconnected rooms.

In Moldavia and the western Ukraine, Yamna kurgans are stratigraphically situated above the Usatovo-Folteşti settlements and graves. Most of the calibrated radiocarbon dates for the Yamna graves west of the Black Sea range shortly after 3000 BC (Table 9).

Site	Lab. No.	Half-life		CRD 1σ BC
		5568 BP	5730 BP	
Baia Hamamgia	KN-38	4060±160	4175	2895-2315
(Romania)	Bln-29	4090±160	4205	2905-2525
Cernavoda (Romania)	Bln-62	4260±100	4380	3045-2790
Varna (Bulgaria)	KI-89	4210±60	4330	2935-2785
Ketégyhaza (E. Hungary)	Bln -09	4265±80	4380	3045-2790

Note: Median date is 30th through 28th centuries BC

Table 9: Radiocarbon Dates from the Yamna Graves West of the Black Sea

Yamna graves from the lower Dnieper, Don, and lower Volga steppe date from the same and also from a later period. A number of earlier Yamna radiocarbon dates from the Ukraine and southern Russia are given for comparison (Table 10). The chronological link is obvious. Table 11 includes radiocarbon dates from later Yamna graves, most of which are secondary graves in barrows.

The East Baltic Area

This section covers the time span from the developed Mesolithic during the Boreal period through the Neolithic, developed from local Mesolithic during the Atlantic times, to the arrival of the Corded Pottery people from the southwest and the Comb-Marked Pottery people from the east in the middle of the 3rd millennium BC.

Mesolithic and Pottery Neolithic of Settled Fishermen: The Kunda and Narva Cultures

A distinct cultural upsurge in the east Baltic began during the Mesolithic when the climate warmed in the Boreal period and when deciduous forest spread through the east Baltic region, developing favorable conditions for fishing. The population associated with the descendants of the final Magdalenian culture and related to the Maglemose culture of northwestern Europe became increasingly settled. The Mesolithic culture, called Kunda, continued into the Neolithic "Narva" stage – a Pottery Neolithic of settled fishermen (Jaanits 1968;

		Half-life		
Site	Lab. No.	5568 BP	5730 BP	CRD 1 σ BC
Pereshehepino 1/13	Ki -100/6	4405±120	4525	3360-2910
Pereshchepino 1/7	Ki -100/5	4310±105	4435	3160-2875
Pereshchepino 1/6	Ki -100/4	4290±90	4410	3150-2865
Brilyuvata 5	Ki -100/2	4530±130	4660	3390-3020
Brilyuvata 6	Ki -497	4270±120	4390	3055-2800
Brilyuvata 12	Ki -494	4080±100	4195	2885-2535
Tsatsa 6/3	UCLA-1270	4210±80	4330	3005-2765
Khristoforovka 1/1	Ki -578	4170±170	4290	3005-2620
Ust'man 1/13	UCLA-1271	4150±80	4270	2915-2635
Svatovo I/I	Ki -585	4000±190	4115	2885-2300
Svatovo 2/1	Ki- 586	4010±180	4125	2890-2305
Svatovo 1/1	SOAN-1043	4150±30	4270	2895-2655
Verkhne Tarasovka 9/18	Ki -602	4070±120	4185	2880-2535
Ust'Dzhegutinskaya 32/10	LE-693	4110±60	4225	3880-2635
Ust'Dzhegutinskaya 24/1	LE-687	4040±60	4155	2670-2535
Balki 1/57	Ki -606	4370±120	4495	3190-2900
Balki 1/40	LE-1168	4080±90	4195	2885-2535
Balki 1/40	Ki -601	3990±110	4105	2665-2395

Note: Dates are from several phases.

Table 10: Radiocarbon Dates from the Yamna Kurgans in the Ukraine and South Russia

		Half-life		
Site	Lab. No.	5568 BP	5730 BP	CRD 1 σ BC
Ostradnoe 1/22	Ki-100/3	3920±110	4030	2640-2305
Borisovka	Le-856	3920±50	4030	2550-2320
Demitrovskii 10/12	Le-824	3920±50	4030	2550-2320
Ust'Dzhegutinskaya 33/2	Le-692	3900±60	4010	2435-2310
Ostradnoe 1/17	Ki-431	3890±105	4000	2555-2285
Shibel'nyi	(Merpert 1974:83)	3880±90	3990	2550-2185
Gireeva mogila	Le-136	3870±130	3980	2640-2150
Demitrovskii 1/5	Le-822	3850±90	3960	2430-2165
Otradnoe 1/21	Ki-452	3830±120	3940	2425-2155
Verkhne Tarasovka 17/3	Ki-581	3820±190	3930	2635-1975
Verkhne Tarasovka 21/11	Ki-582	3740±150	3845	2410-1945
Demitrovskii 1/16	Le-823	3680±60	3785	2195-1960
Otradnoe 36/4	Ki-483	3660±120	3765	2315-1870
Pervokonstantinovka 12/6	Ki-524	3480±75	3580	1990-1705

Table 11: Radiocarbon Dates from Later Yamna Graves in the Eastern Ukraine and South Russia

			Half-life		
	Site	**Lab. No.**	**5568 BP**	**5730 BP**	**CRD 1 σ BC**
MESOLITHIC KUNDA CULTURE					
01	Kunda, Estonia	TA-14	8340±280	8590	*6640
02		TA-16	6015±210	6150	5225-4700
03	Sārnate, Latvia	LE-899	8900±90	9165	*7215
04		LE-900	7860±60	8095	*6195
05		LE-901	7570±90	7795	*5845
06	Narva, Estonia	TA-53	7640±180	7870	*5920
07		TA-25	7580±300	7805	*5855
08		TA-52	7315±190	7335	*5385
09		TA-41	7090±230	7295	6260-5565
10		TA-40	6740±250	6935	5840-5350
11		TA-17	6020±120	6190	5195-4875
12	Osa, Latvia	Bln-770	7168±160	7375	6325-5660
13		LE-881	6960±80	7160	6035-5505
14		LE-812	6760±80	6955	5810-5395
15		LE-810	6580±70	6770	5615-5310
FOREST NEOLITHIC NARVA CULTURE					
16	Narva, Estonia	TA-33	5820±200	5985	5000-4440
17		TA-7	5300±250	5450	4915-3875
18	Osa, Latvia	LE-961	5880±80	6050	4975-4565
19		LE-962	5780±70	5945	4730-4550
20		LE-850	5730±50	5895	4580-4535
21		LE-758	4000±60	4115	2655-2525
22	Kääpa, Estonia[a]	TA-5	4865±235	5000	3880-3480
23		TA-6	4480±255	4610	3540-2885
24		TA-4	4350±220	4975	3365-2790
25	Sārnate, Latvia	TA-26	4700±250	4835	3680-3340
26		Bln-769	4640±100	4775	3560-3350
27		TA-265	4630±70	4760	3520-3335
28		LE-814	4510±110	4640	3380-3035
29	Šventoji, Lithuania	TA-247	4440±90	4565	3365-2940
30		Vs-23	4400±55	4525	3190-2935
31		LE-904	4225±70	4340	2945-2790
32		LE-833	4100±60	4215	2880-2630
33	Piestiņa, Latvia[b]	LE-750	4670±150	4805	3660-3335
34		LE-748	4520±120	4650	3380-3040
35		LE-867	4250±50	4370	3015-2865

a. Upper Kääpa includes Comb- and Pit-Marked pottery.
b. Piestiņa also includes Comb- and Pit-Marked pottery.
* Estimate.

Table 12: Radiocarbon Dates from East Baltic Mesolithic and Neolithic Sites

Rimantienė 1971, 1979; Zagorskis 1967). A number of sites were occupied from *c.* 7000 to *c.* 2500 BC. The cultural continuum is attested by a number of radiocarbon dates from Kunda, Narva, Sārnate, Osa, Pieštiņa, Kääpa, Šventoji, and other sites (Table 12).

The richest peat bog sites of the Narva culture, with an exceptional preservation of wooden artifacts (fishing tools, dugouts, oars, troughs, ladles, sculptures of water birds, snakes, elks, and owl goddesses), fabrics of linden bast, fishing nets as well as amber ornaments, are Šventoji in western Lithuania (Rimantienė 1979, 1980) and Sārnate in western Latvia (Vankina 1970), both near the Baltic Sea.

The cultural situation changed drastically with the appearance of totally new cultural complexes: the Pit- and Comb-Marked Pottery food gatherers and the Corded Pottery food producers.

The Pit- and Comb-Marked Pottery Culture

Just before the arrival of the Corded Pottery people came the hunter/fisher folk, called Pit- and Comb-Marked Pottery people, considered to have been Finno-Ugric speakers. They entered Finland, Estonia, and Latvia; offshoots reached western Lithuania (Gurina 1961). The campsites of the Pit- and Comb-Marked Pottery people were contemporary with those of the Narva group (Table 12). After the Corded Pottery people entered the same territories, the Finno-Ugric stock gradually retreated to the north and stabilized in Estonia and Finland.

The Corded Pottery Culture

The sites of the first agriculturalist stockbreeders along the southeastern coast of the Baltic Sea (the Baltic "Haffküstenkultur" or "Rzucewo" group) precede those of the more northern and eastern territories. Southeast Baltic ceramic ware is typologically close to that of the "Common European Corded Pottery Horizon," but there are no radiocarbon dates of the earliest phase. Dates from Lithuania and Latvia are from the mid 3rd millennium BC (Table 12).

The Baltic "Haffküstenkultur" group (Rzucewo) is known from a series of villages near the Baltic Sea, some fortified, with above-ground houses standing close together. The most prominent sites are Succase (Suchacz) and Tolkemit in former east Prussia, and Rzucewo in the Vistula delta. The former, a village of some twenty houses, is assumed to have spanned three or four habitation horizons (Ehrlich 1940). Small, permanent villages have also been discovered in western Lithuania: Šventoji, Būtingė, Šarnelė, and Nida (Rimantienė 1979, 1980). A full range of domesticated animals was present. Remains of domesticated plants are poorly documented except for hemp. At Šventoji and Šarnelė (Lithuania) both hemp seeds and cords were found. Agricultural tools – saddle querns, pestles, flint sickle blades – and grain impressions on pottery are known only from the later settlements of this culture.

A similar spread of new culture groups is apparent in the upper Dnieper – upper Volga basins – the cultures known as the "Upper and Middle Dnieper," the "Fat'janovo" (upper Volga), and the "Balanovo," on the Volga in eastern Russia (Krainov 1972; Bader 1963; Bader and Khalikov 1976). Here, as elsewhere, the Corded Pottery/Battle-axe people spread along the rivers and established their hillforts on high riverbanks or promontories. Their dead were buried under barrows 1-2 meters high, as in Poland. Their social structure, economy, and armament must account for their success in overcoming the local hunters and fishers of Byelorussia and central Russia (the Volosovo culture) whom they probably absorbed. The same pattern of social structure as in central Europe is evidenced in all these newly acquired territories. A number of exceptionally rich burials in isolated barrows, higher than the rest, witness the importance of prominent males, probably tribal or district leaders, a good example of which comes from Moshka in the upper Dnieper basin (Artemenko 1964).

The later cultural development in these areas is not pursued, except to state that it was gradual and continuous during the Bronze and the Iron Ages. The territories between the Baltic Sea in northern Poland and central Russia are strewn with river names of Baltic origin.

		Half-life			
Site	**Lab. No.**	**5568 BP**	**5730 BP**	**CRD 1 σ BC**	**Comments**
EARLY NEOLITHIC					
01 Sakhtysh I	LE-1021	6560±250	6750	5660-5250	
02 Ivanovskoe V	LE-1109	5560±100	5720	4545-4365	
03 Yazykovo I	LE-1189	6370±70	6565	5395-5205	
04	LE-1080	6250±60	6380	5275-5010	
05	LE-1190	5950±90	6120	5070-4720	
06	LE-1188	5490±70	5645	4430-5335	
PIT-AND COMB-MARKED POTTERY CULTURE					
07 Yazykovo I	LE-1079	5280±130	5430	4385-3880	
08 Sakhtysh I	LE-1024	5150±40	5285	3970-3850	
09	LE-1020	5000±70	5145	3890-3760	
10	LE-1019	4850±70	4990	3785-3545	
11	LE-1023	4060±60	4175	2685-2540	
12 Ivanovskoe III	GIN-241	4800±250	4935	3860-3365	
VOLOSOVO CULTURE					
13 Modlona	—	4960±130	5100	3895-3645	
14	—	4850±150	4990	3865-3495	
15	—	3960±120	4075	2655-2320	
CORDED POTTERY-FAT'JANOVO CULTURE					
Krivina, Vitebsk area	GrN-5125	4270±40	4390	3030-2875	Charcoal pretreated with acid and alkali
Krivina	LE-757	3880±60	3990	2425-2300	
Turginovskii (upper Volga)	LE-1046	3780±130	3885	2420-1980	Cemetery, upper Volga
Volosovo-Danilovskii (upper Volga)	LE-1044	3650±80	3755	2195-1885	Cemetery, upper Volga

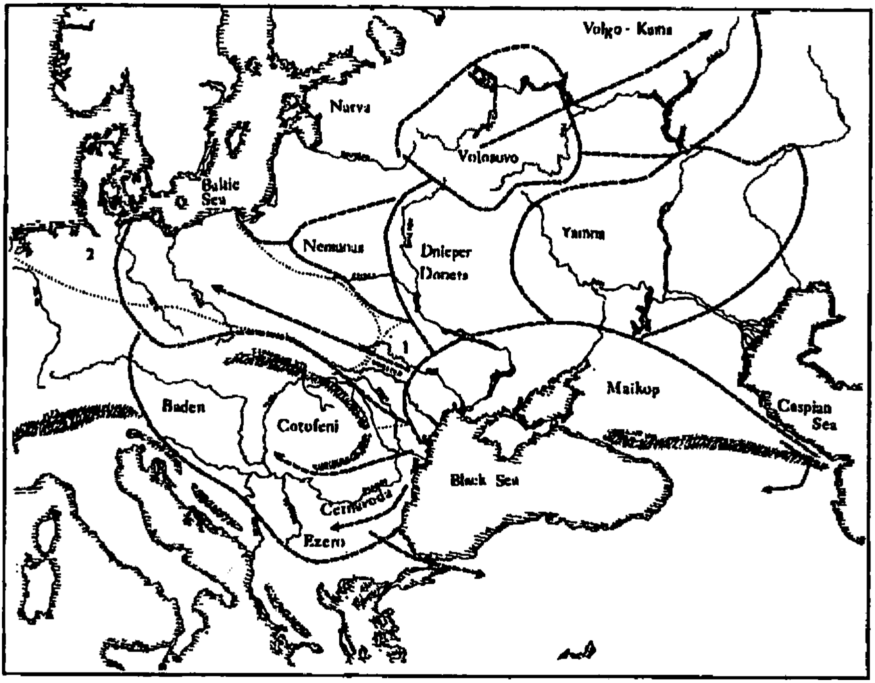
Table 13: Radiocarbon Dates from Upper Dnieper-Upper Volga Basins in Byelorussia and Central Russia

Belorussia and Central Russia: Upper Dnieper-Upper Volga Basins

Radiocarbon dates show the beginning of the Neolithic period in the upper Volga basin to be as early as the 6th millennium (Table 13:1, 3, 4) and to continue throughout the 5th (Table 13:2, 5, 6). "Neolithic" is applied here for the culture of hunters and fishermen with pottery and polished stone tools. It follows the Swiderian Mesolithic and is synchronous with the early Narva culture. Pollen analyses suggest the second half of the Atlantic period, the time of climatic optimum, warm and humid, when the Russian plain was covered with forests of deciduous trees.

The Pit- and Comb-Marked Pottery culture layers overlie (at Sakhtysh I, Yazykovo I, and Ivanovskoe III) the earliest Neolithic deposits without any sterile layer between them. The majority of the radiocarbon dates falls within the first half of the 4th millennium BC.

The latest horizon, called Volosovo, immediately follows the horizon of Pit- and Comb-Marked Pottery culture, although radiocarbon dates indicate a parallel existence of the two (Krainov 1972) (see Map 3).



Map 3: Culture groups of east Europe *c.* 3500-3000 BC. The Yamna (Kurgan Wave No. 3) moved to the wast *c.* 3000-2800 BC. The Narva, Nemunas-upper Dnieper, and Volosovo cultures formed a substratum after the incursion of the Corded Pottery people in northeastern Europe *c.* 2500 BC.

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Proto-Indo-European Culture: The Kurgan Culture during the Fifth, Fourth, and Third Millennia B.C.*

Post-World War II developments in archaeology in general and the breathtaking pace of excavations in the Soviet Union and the satellite countries have changed many of the old views on *"die indogermanische Urheimat."* Chronological and geographical gaps gradually are being filled and archaeologists can present some facts with some certainty. The existence of Indo-European homelands advocated by linguists for more than 100 years is no longer an abstraction; results achieved by archaeological research make it possible to visualize the homelands, at a certain time and place, as a historical reality.

Ten years ago (in 1956) at the International Congress of Ethnological Sciences in Pennsylvania I gave a paper on "Cultural change in Europe in 2000 BC" and ventured to show a map of the expansion of the Kurgan Pit-grave culture to Europe from the Ukraine and south Russia, beyond the Dnieper River. At the time carbon-14 dates were non-existent for dating cultures in this part of Europe, chronological gaps were obscuring the whole picture of cultural development, and the culture north of the Black Sea was insufficiently explored. However, it was clear that only a new force from beyond the Dnieper could have caused the upheaval and disintegration of the long-lasting and flourishing Chalcolithic cultures of Europe and their contemporaries: the Cucuteni-Tripolye, Gumelniţa-Salcuţa, Butmir, Vinča, Lengyel, Tiszapolgár-Bodrogkeresztúr, Funnel-necked-Beaker, and primitive Forest cultures in northeastern Europe: the Pit-marked Pottery culture in central Russia and the Comb-marked Pottery culture in the East Baltic area. Instead of a colorful mosaic formed by agricultural cultures, elements of totally different character spread over a wide area, suggesting a transition to a predominantly pastoral economy and patriarchal society. Burial rites, religious symbols, ornamental motifs, and equipment that originated in the Eurasian steppe region became widespread.

The hypothesis of the cultural change in Europe as well as in the Near East caused by the invasion of hordes of pastoralists from the North Caucasian-lower Volga steppe area continues to be supported by new archaeological data and new dating possibilities. Of particular importance were discoveries of stratified village and hillfort sites of the Kurgan culture between the lower Dnieper and lower Volga; the discovery of another Neolithic culture north of the Black Sea, called Dnieper-Donets, was found to coexist with the Kurgan culture throughout the 5th millennium BC; the recognition of Kurgan materials in Cucuteni-Tripolye in the Ukraine and Moldavia sites and their synchronization, which is of great value in establishing the chronology of the Kurgan advancement westward; the disruption of the flourishing Gumelniţa-Salcuţa culture of Bulgaria and Romania and Tiszapolgár-Bodrogkeresztúr in the east Hungarian Plain by the Kurgan people indicated by typical Kurgan graves and other elements of their culture, as well as by the carbon-14 dates obtained for Kurgan graves and settlements (Lagodovska *et al.* 1962; Telegin 1968; Gimbutas 1965a:494; Thomas 1965:386-392 [carbon-14 dates of Corded Pottery sites are listed]).

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Constantly accumulating archaeological discoveries have effectively eliminated the earlier theories of Indo-European homelands in central or northern Europe and in the Balkans. The Kurgan culture seems the only remaining candidate for being Proto-Indo-European: there was no other culture in the Neolithic and Chalcolithic periods which would correspond with the hypothetical mother culture of the Indo-Europeans as reconstructed with the help of common words, and there were no other great expansions and conquests affecting whole territories where earliest historic sources and a cultural continuum prove the existence of Indo-European speakers.

The acknowledgement of the advance of Kurgan cultural elements and people during the 4th and 3rd millennia BC from the east to Europe and from the north across the Caucasus to the Near East permits us to direct and concentrate our attention on the area from which the movements started.

Terminology

The name *Kurgan culture* (the Barrow culture) was introduced by the author in 1956 (Gimbutas 1956) as a broader term to replace Srednij Stog II and Pit-grave (Russian *Yamna),* names used by Soviet scholars for the culture in the eastern Ukraine and southern Russia, and Corded, Battle-Axe, Ochre-Grave, Single Grave, and other names given to complexes characterized by elements of Kurgan appearance that formed in various parts of Europe after the infiltration of Kurgan elements from north of the Black Sea. The word *Kurgan (barrow* in Slavic and Turkic) is retained because it has appropriate connotations of eastern origins (Fig. 1).

The Kurgan culture covers early, middle, and late periods of cultural development between the lower Dnieper and southern Siberia and all its synchronous manifestations outside this area. The question of continuous development throughout the 4th and 3rd millennia BC is not doubted. Metal was already known but in earlier phases was very rare. The culture was in a chalcolithic (copper-stone) stage except for its late period in the centers of metallurgy (such as the Caucasus) which should be classed as Early Bronze Age.

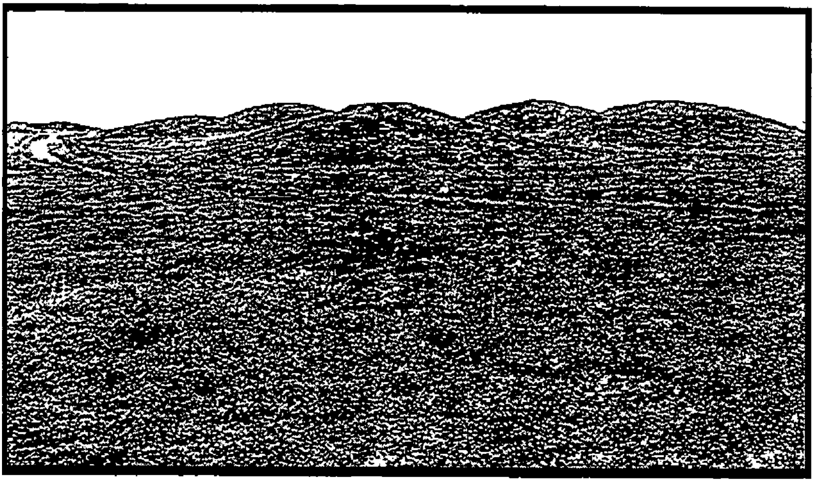

Fig. 1: The tumuli (round barrows, "kurgans") typifying the Kurgan culture during the Chalcolithic and its Bronze and Iron Age manifestations in Europe and Asia. (Photo from Föhr, Western Germany).

General Characteristics

Economy. The economy was predominantly pastoral. The principal domesticated animals – cattle, sheep/goat, horse, and pig – were known throughout the Kurgan period. As yet the evidence for the initial phases of horse domestication is too thin. Long-lasting Kurgan settlements are not known. Usually they are found on dunes, and only a few yielded information confirming horse breeding. Domestic animal bone found in Early Kurgan villages yielded horse bone up to 70-80 percent of the total. A village at Dereivka near Kremenchug in the lower Dnieper area showed the following percentages of domesticated animal bones: horse 68 percent, cattle 21 percent, pig 9 percent, sheep and goat 7 percent.[1] That wild animal bones accounted for only 17 percent of the total in this village is indicative of the relative unimportance of game animals for food. In another settlement, Khutor Repin on the lower Volga, horse bones made up 80 percent of all domesticated bones.[2] Bones were discovered in rubbish pits among other remains of meals. The dating of the

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[1] The village of Dereivka was excavated between 1959 and 1965 by D. Ya. Telegin. Finds are stored in the Museum of the Archaeological Institute of the Ukrainian Academy of Sciences in Kiev.

[2] Lecture on stock-breeding of lower Volga Kurgans by V. P Shilov during the archaeological conference of the Soviet Union, Moscow, April 15-21, 1968. The settlement of Repin belongs to the Middle Kurgan period.

Geophysics Laboratory of the University of California at Los Angeles (done by Reiner Protsch) gave the date of 4400 BC. (This date is corrected according to a calibrated scale produced by radiocarbon analysis of sequential tree ring samples of known age. Thus the date is a true calendrical approximation rather than an expression in conventional radiocarbon years.)

The use of the horse for meat and milk was probably the original motive for its domestication. Ropes or leather straps and bone or antler cheek-pieces for horse bridling must have been used from earliest phases of domestication. It is unthinkable that herds of horses could be controlled on foot. A series of perforated antler pieces, curved, straight, or bifurcated, found in 5th millennium sites north and west of the Black Sea, suggest their use as parts of a bridle.[3]

Flat figurines in the form of a horse's head, made of diorite or other semiprecious stone and presumably used as sceptres having magical protective powers, have been discovered in the lower Volga region, the north Caucasus steppes, the Ukraine, Moldavia, Dobrudja, Transylvania, and southern Yugoslavia. Some were found in typical Kurgan graves.[4] All figurines so far known are very similar to each other. Some of them clearly show decoration of the horse's head by grooves or ridges around the nose and along the top of the head. This might be a representation of a bridle made of leather straps or of ropes (Fig. 2). These sculptures are the earliest pictorial representations of bridled horses. In the Kurgan sites of the third quarter of the 3rd millennium BC, cheek-pieces for horse bridles were already made of metal (made of a bronze/copper wire with a loop in the middle) in Transcaucasia.[5]

To identify domesticated horse bones is a difficult matter. Only very recently have animal bone specialists advocated the presence of domesticated horse with some certainty.[6] Horse was locally domesticated, and the process could have been similar to what was known in the Siberian steppes in the 18th century AD: only geldings were ridden; the main herds of horses were kept more or less wild under a stallion, control being exercised through the mares which were milked and kept hobbled near the tents (Radloif 1883). Settlements usually yield both domesticated and wild horse bones. The wild horse of the Eurasian steppe, called *tarpan,* has been identified among the remains of wild animal bones and this same kind was domesticated.

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[3] The author has seen such antler pieces among the materials of the Dereivka settlement in Kiev and of Novye Ruseshty, a Tripolye *A* site, in Kishenev during the visits of 1965 and 1968.

[4] One sceptre is in the Museum of Kuybyshev from the lower Volga region, another was discovered at Archarinsky near Elista in the north Caucasian steppe (Sinitsyn and Erdniev 1966). In the western Ukraine, a sceptre was found at Berezovskaja hydroelectric station on the southern Bug during the 1965 excavation by V. P. Chibeskov, in association with Tripolye *B*1 (Cucuteni *A*) materials.

[5] The earliest bronze cheek-piece so far comes from the Maikop phase in Kuro-Araks, Transcaucasia: oral communication by B. I. Krupnov, 1968, Moscow.

[6] V.I. Bibikova (Kiev) and S. Bökönyi (Budapest) agreed on Dereivka horse bones belonging to a domesticated kind.

The horse was in great demand by the more civilized, agricultural peoples of east central Europe and the Balkan Peninsula. The presence of the domesticated and bridled horse in the Cucuteni-Tripolye, the Gumelniţa, and the Tiszapolgár-Bodrogkeresztúr cultures in the 4th millennium BC speaks for a rapid spread of horse domestication westward. The diffusion of Kurgan elements westward seems to have been connected with the spread of horse domestication. Horse bones are known in the early Tripolye (Pre-Cucuteni) and classical Tripolye (Cucuteni *A*) settlements in the western Ukraine (David and Markevich 1967:21-22) and in the Tiszapolgár-Bodrogkeresztúr sites of east central Europe.[7] The Gumelniţa layer of the Photolivos mound in the Drama Plain in Macedonia excavated in 1968 by the UCLA-Sheffield University Expedition yielded a horse-head figurine with a possible indication of a horse bridle (Fig. 3). Horse bones also were found in several Gumelniţa sites south of Bucharest.

The Kurgan people lived in the steppe and forest-steppe zone, but in the 5th and 4th millennia the climate was warmer and damper than at present and what is now the steppe zone was more forested. Mixed forests, including oak, birch, fir, beech, elder, elm, ash, aspen, apple, cherry, and willow extended along rivers and rivulets in which such forest animals as aurochs, elk, boar, wild horse, wolf, fox, beaver, squirrel, badger, hare, and roe deer were present. These are evidenced in the settlements of Mikhajlovka in the district of Kherson.

Elk antler, cattle and sheep bones, and boar tusks were amply used for tools and ornaments. One of the most typical Kurgan tools which appears in graves and settlements was a hammer-hoe made of elk antler. This could be a prototype of the later battle-axe made of stone or metal. Bone awls, chisels, and polishers are very frequent finds. Flint arrowheads were used as weapons and for hunting. Wooden bows are not preserved, but their presence is attested by engravings on stelae and stone slabs of graves. From engravings and actual traces in graves it is known that the Kurgan people carried arrows in skin quivers as did the Scythians. Flint scrapers, knives, perforators, and copper and bone awls were used for fur and leather work. The presence of bone or antler harpoons, points, fishhooks, and fish bones in Kurgan villages indicated that fishing was an important means of subsistence.

Agriculture was practiced but not highly developed. Only a few flint sickles are known from the entire Pontic region. Grindstones, pestles, saddle-querns, or flat stones in settlements are evidence of agricultural activities (Lagodovska *et al.* 1962:173-176). Millet grains and melon seeds were found in Late Kurgan settlements and graves north of the Black Sea. A triangular sandstone instrument, 26.5 cm. long and having a sharp edge, found in the upper layer of the Mikhajlovka settlement, may have been used as a ploughshare. Until now very little study has been done on the question of Kurgan farming north of the Black Sea. Analyses of pollen spectra in the Netherlands have shown that

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[7] Horse bones from the Tiszapolgár cemetery of Deszk B, southeastern Hungary, identified by S. Bökönyi (1959). Since then domesticated horse bones were found in a cemetery of the Bodrogkeresztúr phase. According to Bökönyi, bones of domesticated horses from the site of Dereivka in the lower Dnieper region go very well together with those in Hungary.

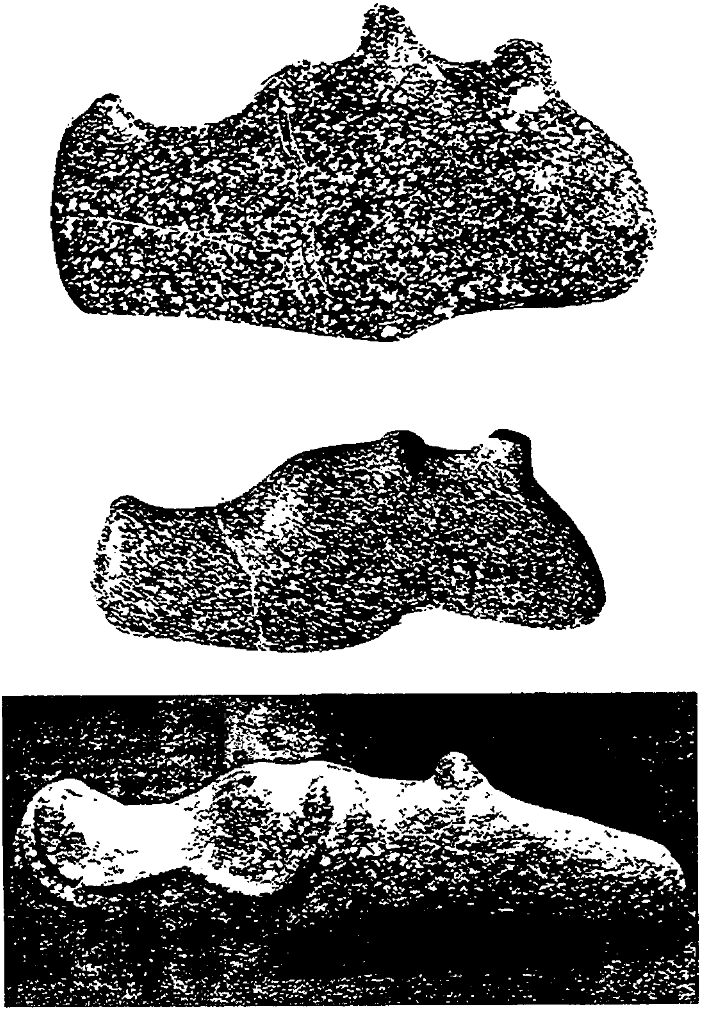

Fig. 2: Horses' heads carved of diorite, used as scepters. Harness parts are indicated by incision or relief. 1) Salcuţa, SW Romania; 2) Fedeleşeni, Moldavia; 3) Šuplevec near Bitola, South Yugoslavia. Approximate date: end of the 5th millennium BC.

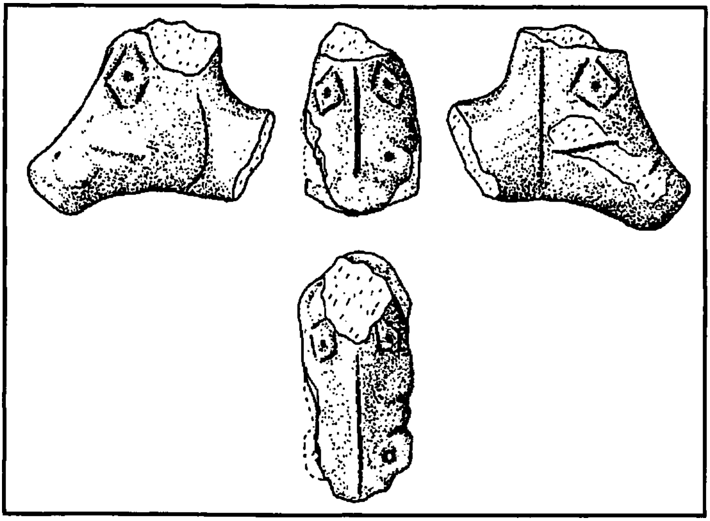

Fig. 3: Horse (?) head figurine of clay from the Gumelniţa (Diklitash) layer of the mound of Photolivos near Drama in Greek Macedonia. UCLA-Sheffield University excavation 1968. The age: end of the 4th millennium BC.

grain cultivation must have been of importance to the earliest Kurgan settlers in northwestern Europe. In Denmark, plough marks have been observed underneath a barrow of Kurgan type, which is proof of the use of the wooden ard (Van der Waals 1965:26). Typically, the Kurgan people settled in flat grasslands, in a landscape favorable to horse and cattle grazing. When they expanded it can be seen that they were searching for pasture lands, such as the steppe area north and west of the Black Sea, Dobrudja, the Danube Plain, the East Hungarian puszta, the Kuro-Araxes Valley in Transcaucasia, and the prairie lands of Syro-Palestine.

Remains of two- and four-wheeled wooden vehicles with solid wheels of oak and their models in clay have been found in the lower Dnieper and Volga region. Disk wheels and their miniature models in clay are also known from almost all areas to which the Kurgan people spread. From what we know of the Dnieper and Volga regions these represent an open four-wheeled cart and a covered two-wheeled steppe wagon. Actual remains and clay models are known from graves. They apparently served as hearses for royal burials; miniature models of clay were deposited as symbols of real wagons. How early they appeared we do not know since such objects are preserved only in exceptional cases. Judging from the grave types of Storozhevaja Mogila in the lower Dnieper north of the Black Sea, in which wooden remains of two-wheeled carts were found (Fig. 4), the earliest vehicle may date from the Early Kurgan period, at the latest from the early part of the 3rd millennium BC. Solid wheels of oak from the peat-bogs of the Netherlands belong to the end of the 3rd millennium as carbon-14 dates show (Van der Waals 1965:52ff; Piggott 1968:266-319), and thus are roughly synchronous with Late Kurgan vehicles in south Russia and the Caucasus. There is no indication that horses were used for traction. More probably oxen were used for this purpose as they were in Transcaucasia where small figurines of yoked oxen in pairs, cast in copper and dated by carbon-14 to around 3700 BC, are found. The vehicle and metal seem to have been transmitted from the East Anatolian-Caucasian (Kuro-Araxes) culture to north of the Caucasus range and the Black Sea. In Mesopotamia vehicles are traced back to the Uruk period – late 4th millennium BC.

Before the Late Kurgan period, metal was represented in the Pontic steppe region only by copper awls and tanged, leaf-shaped knives or small daggers. In Late Kurgan times flat shaft-hole axes appeared which, along with tanged dagger points and awls, were made on the spot (Fig. 5). The existence of local metallurgy is proven by nozzles and crucibles. The Kurgan people in the northwestern Caucasus were acquainted with copper, silver, and gold from about the middle of the 3rd millennium BC, as is shown by the quantities of gold or silver vases, beads, and rings, as well as bull, goat, and lion figurines, copper axes, adzes and axe-adzes, daggers and knives, discovered in the royal tomb of Maikop and the hoard of Staromyshastovskaja in the valley of the River Kuban (Gimbutas 1956:58-59, fig. 28, pls. 9-11). These objects have parallels in the treasure horizon in Anatolia and Mesopotamia. It is certain that Anatolian and Mesopotamian metalwork extended its influence to north of the Caucasus mountains after the Kurgan invasions or raids of the Near Eastern lands.

Pottery was crude, and unpainted; clay was mixed with crushed shells and sand. Forms were extremely conservative, consisting of oval, pointed bottomed pots with necks of various sizes, apparently originally derived from basket shapes. However, flat-based dishes and beakers were used concurrently. Decoration was executed by incision or stabbing with a sharp tool which was usually triangular in cross-section. Other methods included pit impressing, cord impressing, and impressing with a stick wound with cord. (See pottery types from the two periods of the settlement of Mikhajlovka, Fig. 6.)

Social Structure. Information about social structure derives from habitation patterns and burial rites.

There were two types of settlements: simple villages and hillforts. Small villages were located on river terraces and consisted of about ten to twenty small, rectangular, semi-subterranean houses with pitched roofs supported by thin wooden posts (Fig. 7). Dimensions of houses vary from 6 x 13 meters to 10 x 16 meters. Stone-walled hearths were found (both inside and outside of houses), usually one to a house.

The fully excavated village of Dereivka in the lower Dnieper region occupied an area of 2,000 square meters, whereas, for example, larger villages

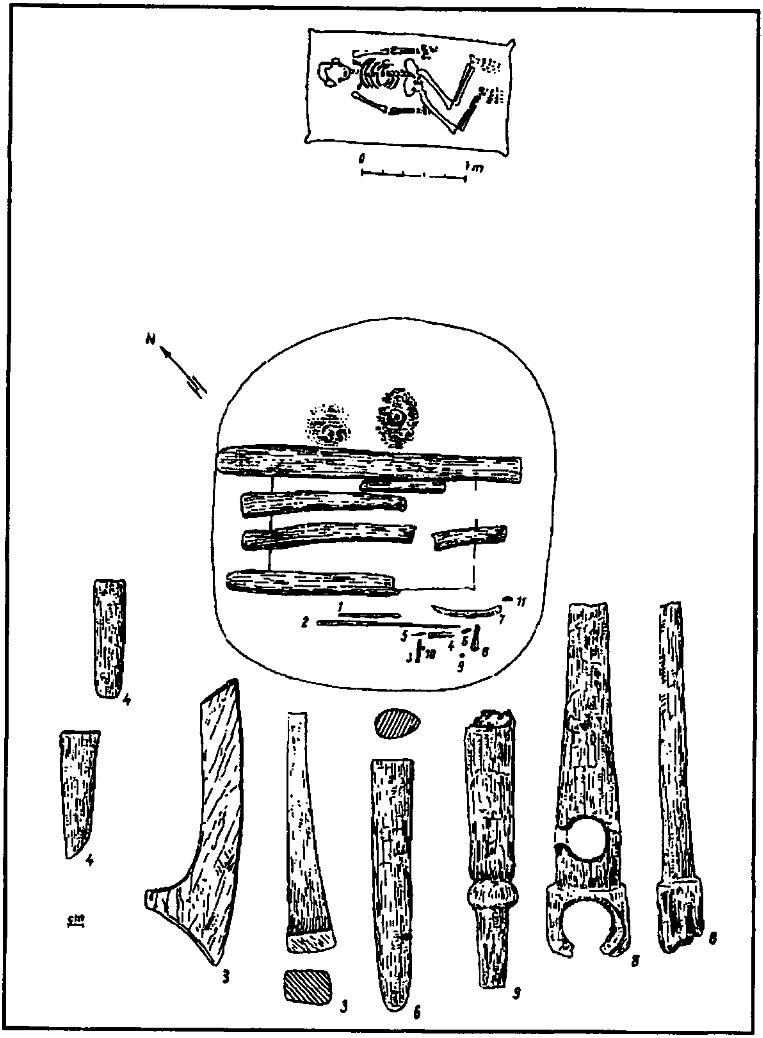

Fig. 4: Preserved wooden parts of a two-wheeled cart from the grave at Storozhevaja Mogila in the lower Dnieper area. The illustration shows the skeleton lying on its back with contracted legs (top), two solid wheels of oak and other parts as they were found (middle), and some of the small parts in detail. Tentative date: 4th millennium BC. (*After* Terenozhkin 1951.)

of the Cucuteni-Tripolye culture in Moldavia and the western Ukraine occupied an area of 15,000 square meters or even more. In some villages nearly two hundred houses were found. Hillfort sites were placed on steep river banks, in places difficult of access, usually on promontories at the confluence of two rivers.

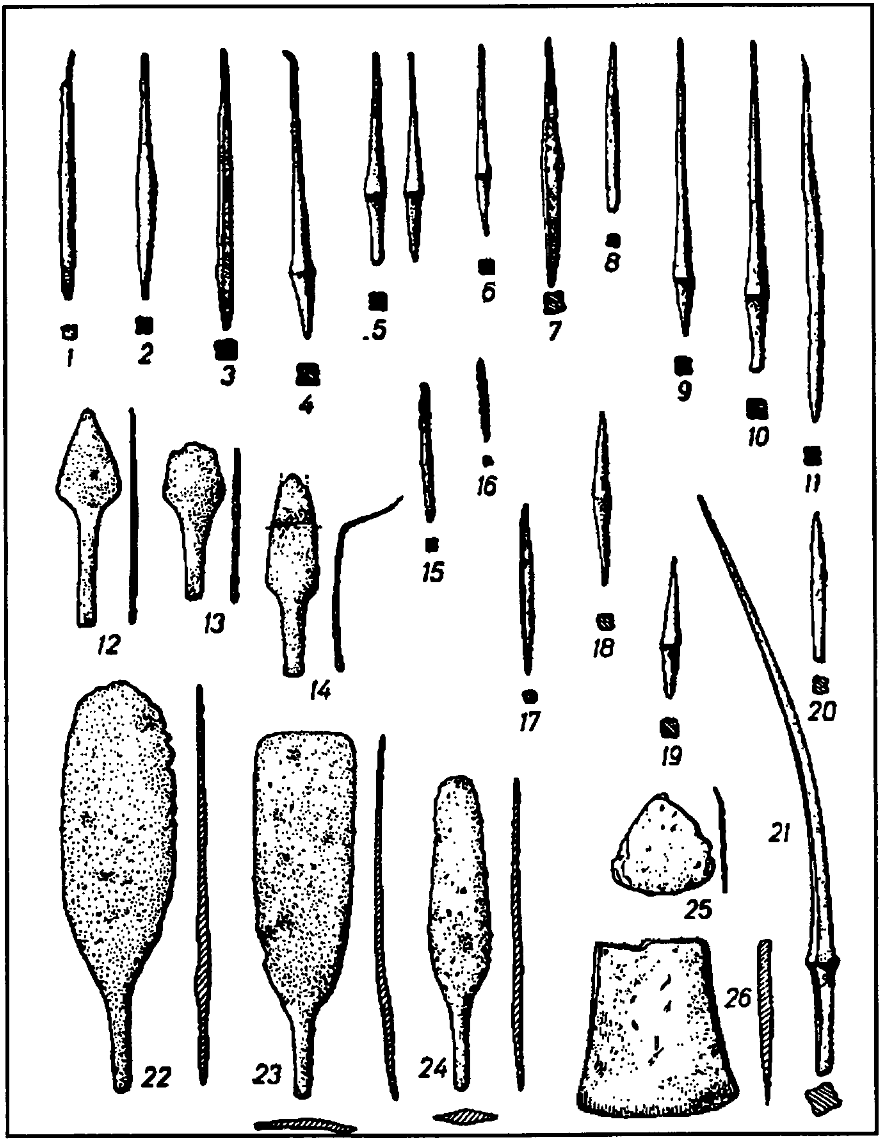

Fig. 5: Copper tools from the hillfort of Mikhajlovka (all except three awls belong to the upper layer of the hillfort). 1-11), 15-21) awls; 12-14), 22-24) daggers and knives or razor blades; 25) a copper plate; 26) part of a flat axe. Scale: approx. 1/2. (*After* Lagodovska *et al.* 1962.)

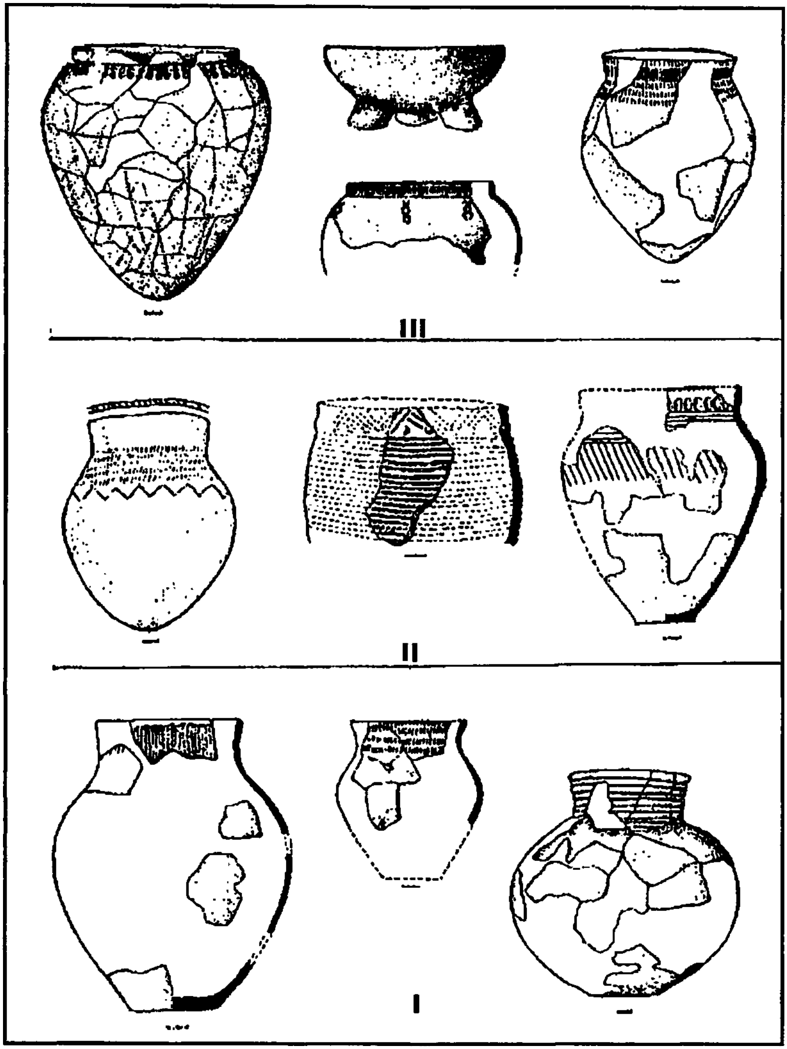

Fig. 6: Three stages of pottery development from the middle and upper layers in the settlement of Mikhajlovka. (*After* Lagodovska *et al.* 1962.)

The following are the best-known examples from the lower Dnieper and Don area: (1) Mikhajlovka, in the district of Kherson on the high bank of the Podpil'na River near its confluence with the Dnieper, is the most important stratified site with its last layer heavily fortified with massive stone walls 3 meters in height, built of about ten rows of large stones, surrounding the settlement from the inland side (Fig. 8); rectangular houses built of timber on massive stone foundations (up to 1 meter in height) had two, three, or more rooms of large dimensions (one house being 45 meters long) (Fig. 9); these houses have no resemblance to the semi-subterranean village houses. (2) Skelja-Kamenolomnja, south of Dniepropetrovsk, is another impressive hillfort, situated on a steep rocky promontory 30 meters high overlooking the Dnieper River; on three sides the cliffs made the site inaccessible, and the sloping western side was fortified with a thick stone wall; the plateau of the hilltop had an area of about 1 hectare; this hillfort, dating from the Kurgan III phase, also included rectangular houses built on stone foundations; the site contained workshops for fabricating polished stone tools, such as battle-axes and mace-heads. (3) Liventsovka at Rostov-on-Don, on a high hill surrounded by a massive stone wall and ditches from outside and inside the wall, excavated in 1962-65.[8] The hillfort yielded five strata (ranging from the Maikop phase to the Bronze Age Timber-grave). The fortifications are held to be of Late Kurgan (Catacomb-grave) age.

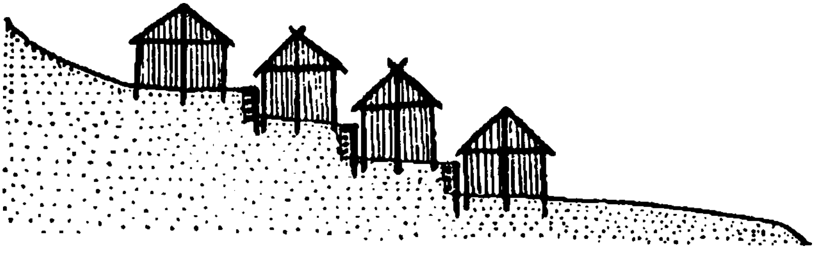

Fig. 7: A schematic section of the village at Rzucewo on the Bay of Gdańsk (Danzig) arranged on reinforced terraces of a dune from the first half of the 3rd millennium BC. (*After* Żurek 1954.)

Other Kurgan hillforts of the 3rd millennium BC are from the Balkan Peninsula and east central Europe. A large hillfort existed at Šuplevec, 17 km. northeast of Bitola in present southern Yugoslavia not far from the Greek border. Now this impressive hillfort is converted into a stone quarry. During the excavation of 1959 it was surrounded by massive stone walls.[9] Seventeen or eighteen houses were uncovered standing in three rows in an oval area of the hillfort. Houses were 4 to 5 meters long and about 3 meters wide, built of vertical timber posts standing in intervals of about 1 meter. Each house contained one either square or circular hearth.

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[8] Excavated by S. Bratchenko, Kiev; materials unpublished.

[9] Excavated by Petar Mačkič; results not published. Materials are in the museum of Bitola, southern Yugoslavia.

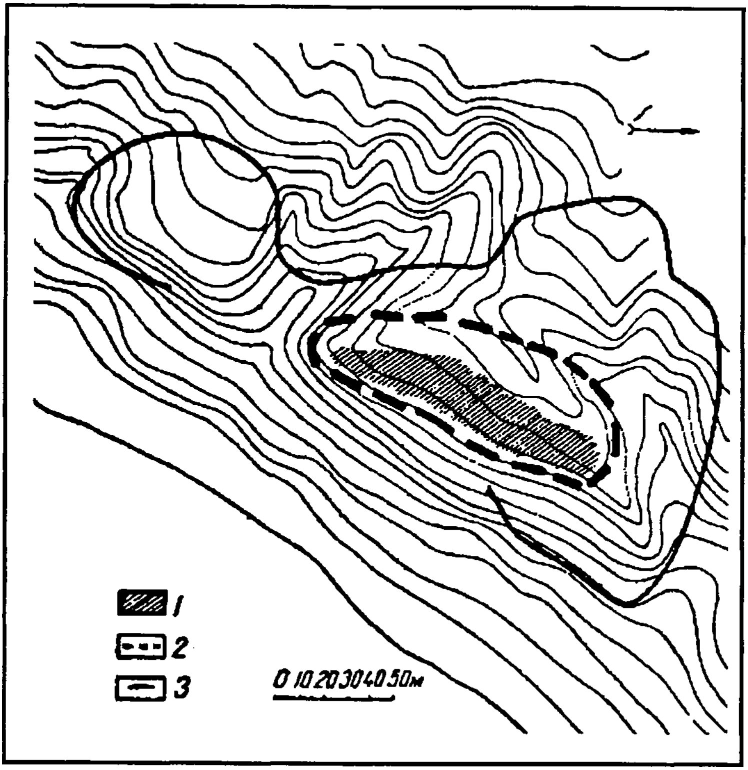

Fig. 8: The situation of the three settlements of Mikhajlovka on the small river of Pidpil'na: 1) Mikhajlovka I; 2) Mikhajlovka II; 3) Mikhajlovka III. The latter occupied a large territory and was protected by huge "Cyclopean" stone walls on the inland side. The settlements range from *c.* 4000 to *c.* 2300 BC. (*After* Lagodovska *et al.* 1962.)

In East central Europe – northern Yugoslavia and western Hungary – many hillforts are reported, among which are the famous Vučedol near Vukovar in northern Yugoslavia, on a steep hill almost inaccessible from three sides (Fig. 10), and the Nagyárpád near Pécs in southern Hungary, on which excavations were finished in 1966.[10] The latter is the most impressive of all, with fifty small houses standing in rows along the paved road leading to the top of the hill, and two large wooden houses, probably royal, on the terrace. This hillfort could house about 250 people. The Vučedol and Nagyárpád hillforts belong to the post-expansion times (Vučedol to *c.* 3300-3000 BC, Nagyárpád to the third quarter of the 3rd millennium BC). The above mentioned hillforts can be considered tribal centers and are prototypes of the later Mycenaean Greek,

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[10] Excavations by János Pannonius Museum, Pécs, led by Dr. G. Bandi.

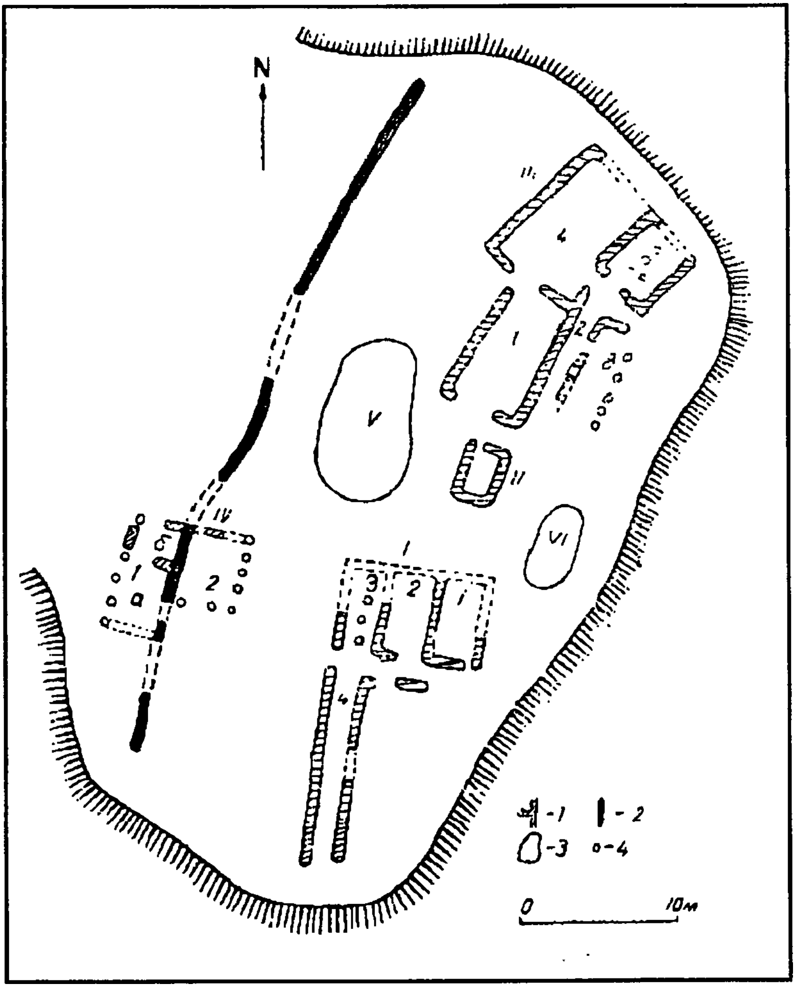

Fig. 9: Plan of the Mikhajlovka III citadel. 1) stone foundations of houses; 2) a Cyclopean wall from the inland side; 3) traces of unexcavated houses; 4) traces of holes from wooden posts. (*After* Lagodovska *et al.* 1962.)

Illyrian, Celtic, Baltic, Slavic, Germanic, and other Indo-European castle-hills, belonging to the chief of a tribe or his subordinates.

Members of the royal and warrior classes can be recognized in exceptionally rich graves; some of these men accumulated a fabulous amount of gold, silver, and precious stones as can be seen, for example, in the Maikop royal tomb of *c.* 2500-2400 BC in the Kuban region of the northern Caucasus. The Maikop king lay in the largest of the three rooms of his mortuary timber house (in two others lay a male and a female corpse), and was dressed in a garment onto which gold ornaments were sown: sixty-eight lion figures, nineteen bulls and thirty-eight rings. Close to his head were found beads and buttons of gold, silver, turquoise, and carnelian. Beside the skeleton lay parts of a canopy consisting of six rods of gold and silver, four of which passed through figures of gold bulls. The richness and grave type of the Maikop royal tomb is comparable to that of Alaca Hüyük in northern central Anatolia, which itself probably belonged to an Indo-European (pre- or early Hittite) ruler. The growth of wealth coincides with the 'treasure horizon' in the Near East. By the middle of the 3rd millennium the Kurgan chieftains had not only been well acquainted with the Near Eastern kingdoms, but also had in their possession great treasures related in general character to those known from Bronze and Iron Age royal tombs, such as Mycenaean shaft grave and tholos tombs, Únětice in central Europe (Leubingen, Helmsdorf, and others), Urnfields in central Europe (Čaka and Očkov in Slovakia, Klentnice in Moravia, Hart in Bavaria, and others), King Midas' or Gordios' in Phrygia, and so forth. Usually royal tombs are found separately from the cemetery of the other members of the society. The graves of laborers frequently contained only a pot, a flint tool, or nothing at all. A very similar distribution of wealth indicating social inequality is traceable in later cultural groups of Kurgan origin throughout the Bronze and Iron Ages.

The burial rites indicate not only social differences, but also the man's dominant role in society: the first and central grave in a barrow usually belongs to a man, perhaps the father of the family or the village elder, and the women's and children's graves occupy secondary positions. The old Indo-European custom that the housemaster had unrestricted right of property over his wife and children and that the wife should die with her husband is indicated archaeologically by frequent double graves of man and woman and of adult and

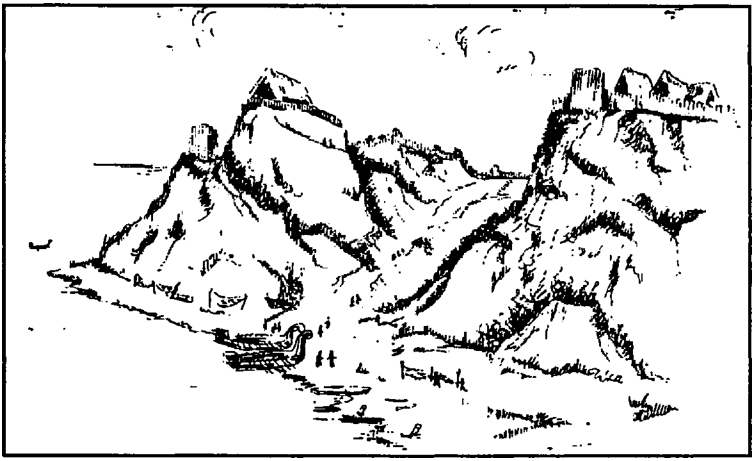

Fig. 10: The hillfort of Vučedol near Vukovar, northern Yugoslavia. A reconstruction. The "Baden" period *c.* 3000 BC. (*After* Schmidt 1945.)

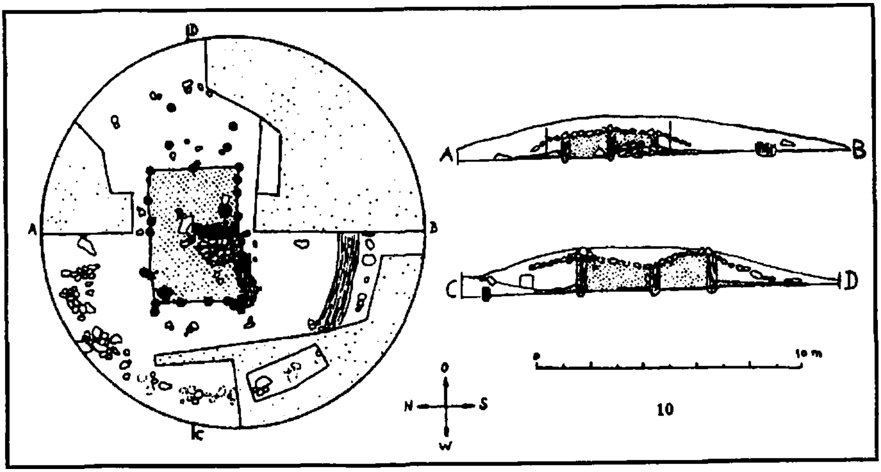

Fig. 11: Plan and cross sections of a Late Kurgan barrow from Switzerland showing a house-like construction with two compartments. The mortuary house was surrounded with a fence, a ditch, and a stone ring. Approximate date: mid-3rd millennium BC. (*After* Drack 1969.)

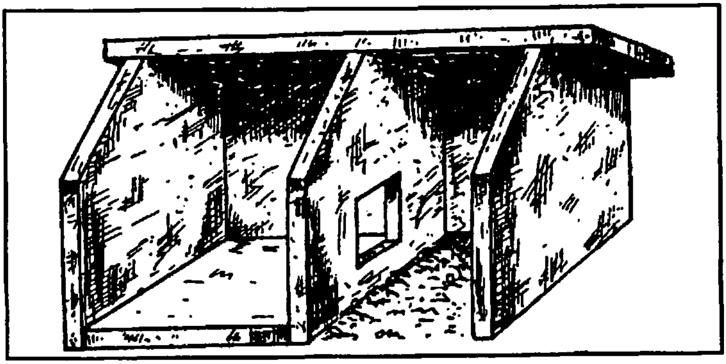

Fig. 12: The stone house from the royal tomb in barrow no. 1 at Tsarskaja (Novosobodnaja) in the River Kuban Valley, northwestern Caucasus. The thickness of the stone slabs was from 17.6 to 26.4 cm., and their weight was from 1.5 to 2.5 tons each. (*After* Veselovskii 1898.)

one or two or more children buried at the same time. Parent-children relationship is shown by bone analyses.

Religion. From graves we know that these people had very strong beliefs about life after death, which had to continue in the same way as life on earth. Therefore graves imitated houses (Figs. 11, 12), and the dead needed their weapons, tools, pots, ornaments, and even vehicles. Animal graves and offering pits or animal bones show the importance of cults and indicated sacrifices of oxen, horses, stags, boars, dogs, bears, sheep or goats, birds, and hares. Kurgan graves north of the Black Sea usually included snake skeletons, sometimes up to ten. Human sacrifice is evidenced by the disposal of separate human bones in pits close to the grave, in some cases mixed with animal bones. Among the human bones were those of children and of adults. Skulls and leg bones of cattle and horses were found separately deposited above or beside the graves. This custom suggests that the animals were meant to be buried together with their master, but their flesh was eaten and the large bones were collected into skins and buried with the dead man – an Indo-European custom persisting into historic times. Graves of two bulls or two horses, or of a mare and a colt, a cow and a calf, a goat and a kid, a sheep and a lamb accompanying a human mother and child are known. Some of the sacrificed animals are likely to be connected with sacrifices at harvest festivals.

Kurgan house graves built of timber or of stone slabs were covered with an earthen or stone mound and then topped with a stone stela. The stela was primitively carved in a human shape and on some of them male attributes were indicated. The figure held an axe or a mace in one hand. In one case a bow was engraved. A belt and sometimes a necklace were shown (Fig. 13). The stelae may have portrayed a male divinity, probably a Thunder-god, whose figure also appeared engraved on cist-grave slabs. Hammer-axes or battle-axes made of antler, stone, semiprecious stone, or copper, that frequently occur in male graves, or engraved on rocks, seem to have been more weapons of the Thunder-god imbued with God's mana than of a human warrior (Figs. 14, 15). Their symbolic character is indicated by zig-zags, rays, or other motifs used for decoration, by their appearance in a miniature size, by lack of working traces, or by the fact that they were made of nephrite, serpentine, diorite, amber, and other materials not appropriate and too expensive to be used for tools (Fig. 16). Footsteps on 3rd millennium stelae and stone slabs very probably are connected with the beliefs in a giant god's footsteps (of the Baltic *Velinas,* Slavic *Veles* type, gods of underground and fertility).

The presence of a male divinity or divinities contrasts with the preeminence of various symbolic female figurines in the Anatolian, Aegean, and Balkan cultures prior to the Kurgan expansion. However, in the early part of and throughout the 4th millennium BC, seated goddesses made of clay, marble, or alabaster appeared in the Ukraine and the northern Caucasus. These were borrowed from the people in the Balkans and the Mediterranean area. A figure of a boar in clay was found in the already-mentioned village of Dereivka (Fig. 17), suggesting that as early as the 5th millennium BC the boar played a role in mythology as it did throughout millennia of early history of the Indo-Europeans. Necklaces and other ornaments were made of boar's tusk. Other animals' teeth, in particular those of wolf, dog, and elk, were also used for necklaces. These occur so frequently in graves that their symbolic significance cannot be doubted. Horses' heads were carved of diorite or other stone. These heads were mounted on a rod and used as scepters (Fig. 2). Bull, stag, and lion figurines of copper or gold are known from royal tombs of the 3rd millennium BC. Stag figurines

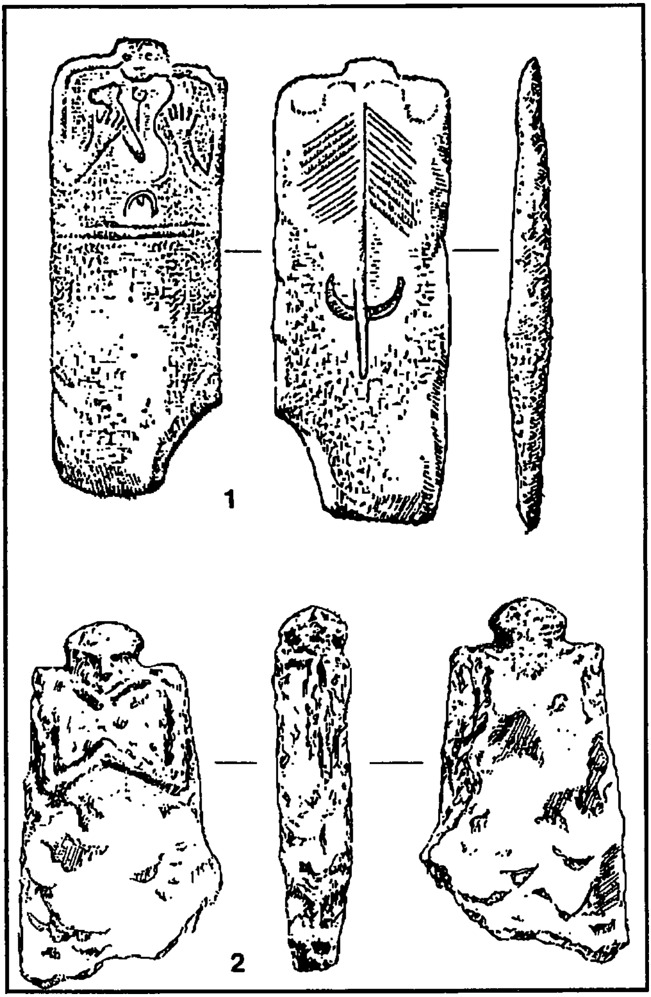

Fig. 13: Anthropomorphic stone stelae (front, back, and side views) from Kurgan IV graves in the lower Dnieper area. 1) Natalivka near Dniepropetrovsk, 1.6 m. high; 2) Pervomaivka near Verkhnorozachinsk, district of Kherson, 52 cm. high. (*After* Markovin 1959 (1) and Illins'ka, Kovpanenko, and Petrovs'ka 1960(2).)

were decorated with concentric circle motifs and had enormous antlers. Stags with supernatural antlers also occur engraved on rocks. They may represent winter solstice symbolism.

Among the symbols on pots, stone, bone and copper objects, we find the snake and the ubiquitous sun (Figs. 18, 19). The fact that the Kurgan people engraved the sun or wheel symbol on almost every ritually important object

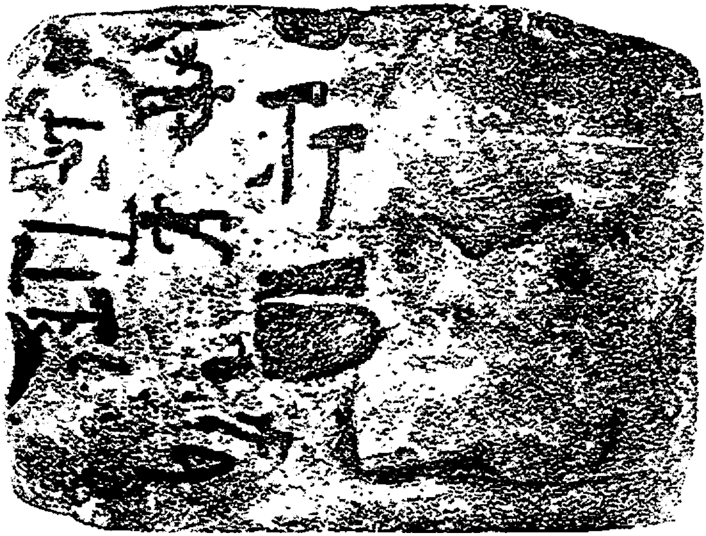

Fig. 14: A limestone slab with engravings of axes, human figures, footsteps, and other symbols from a stone cist grave in the cemetery of Krasnaja Gora near Simferopol, Crimea. Relative chronology: *c.* 2500-2200 BC. (*After* Tallgren 1934.)

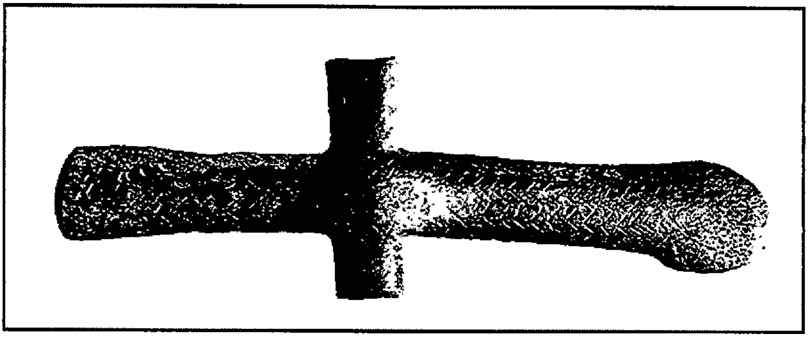

Fig. 15: Copper battle-axe ornamented with zig-zag (lightning bolt?) motifs. Isolated find from Weeze-Baal, Geldern, Western Germany.

speaks for the prominence of the sun cult and the significance of the symbolism in connection with the rotation of the year. Carefully constructed braziers found in houses and in graves suggest the perpetuation of fire as a holy element (Fig. 20). Charcoal, ashes, or pieces of carbonized cow dung in the bottom of cross-footed dishes indicate their use as braziers. The abundance of ochre, charcoal,

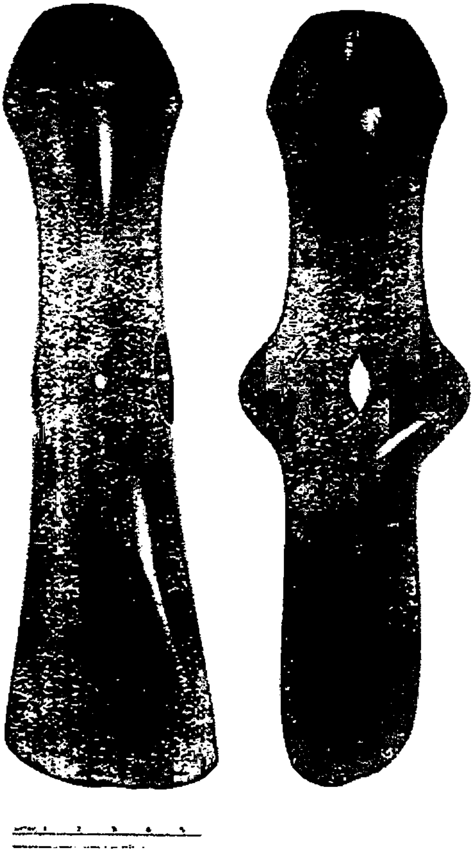

Fig. 16: Late Kurgan battle-axe of nephrite. An isolated find from central Europe. (UCLA Museum and Laboratories of Ethnic Arts.)

and ashes in the graves indicates the ritual significance of fire and of the red color of ochre. Metal cauldrons and other containers may have been used in rites connected with the water cult.

Origins

The earliest Kurgan graves are known from the steppe area between the River Don and the Urals, north of the Caucasus range and north of the Caspian Sea. Most of them are known from the lower Volga region. West of the Don, north of the Sea of Azov, the Crimea, the lower Dnieper, and Dniester region,

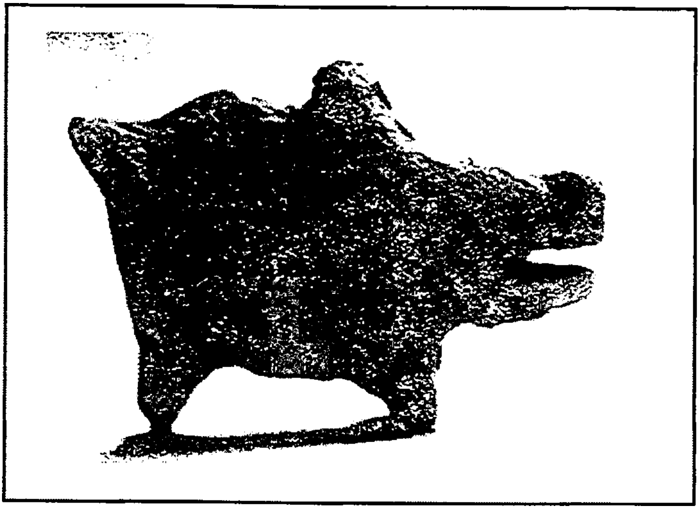

Fig. 17: Small figurine of a boar made of clay, from the village of Dereivka near Kremenchug in the lower Dnieper area. The date: second half of the 5th millennium BC. (Kiev, Institute of Archaeology, excavations by D. Ya. Telegin.)

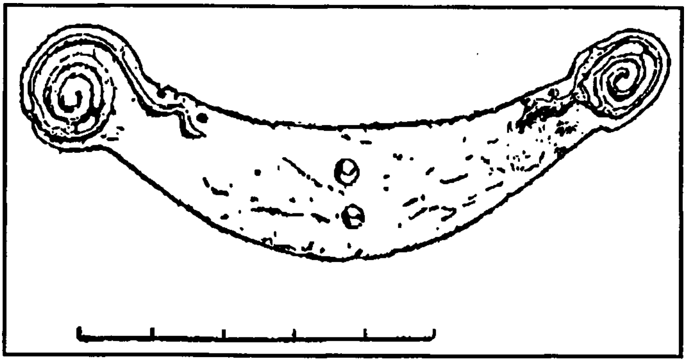

Fig. 18: Ornament made of boar's tusk decorated at the ends with incised snakes coiled in concentric circles. Found in a child's grave together with perforated animal teeth. Cemetery of Nal'chik, central Caucasus, c. 4000 BC. (*After* Kruglov, Piotrovsky, and Podgaetsky 1941.)

the Kurgan people appeared as intruders. Here they found local stock-breeders and fishermen whose archaeological remains are known from such sites as Kamennaja Mogila near Melitopol, the Crimean Neolithic sites and the lower Dnieper Surskaja complex (Vekilova 1966; Danilenko 1969). Between the middle Dnieper basin and the River Donets spread the "Dnieper-Donets culture," certainly of a non-Kurgan character (Telegin 1966).

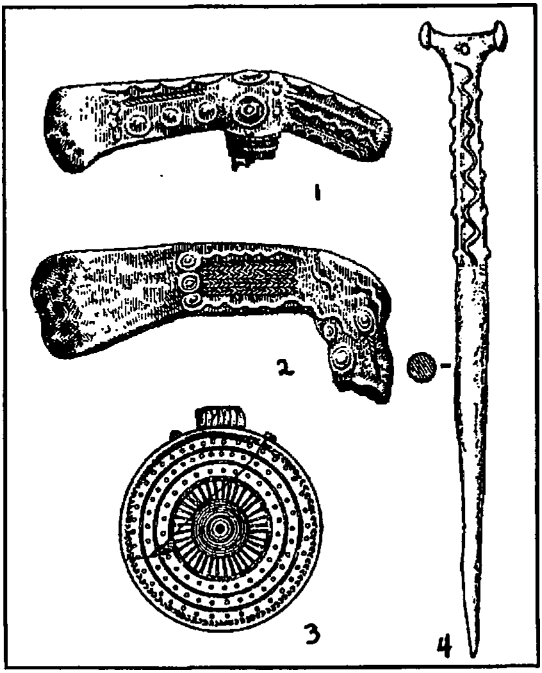

Fig. 19: Copper axes, pin, and pendant decorated with solar and snake motifs from Late Kurgan sites in the north-central Caucasus. (Reproduced from Gimbutas 1965b.)

Although earliest Kurgan materials are very scanty (most of the graves are without inventory, except for ochre and sheep and cattle bones; habitation sites are known from surface materials only), the present evidence points not to the North Pontic, but to the lower Volga-Kazakhstan steppes as the Kurgan homeland area. It is premature to say how far east the early Kurgan culture extended, but at a later period it occupied almost the entire steppe belt in Siberia.

This is supported by the fact that in the Upper Yenisei area a related culture, called Afanasjevo, which belongs to the Kurgan IV period, is known. There are also "Pre-Afanasjevo" materials, but as yet no Neolithic sites of respectable age have been excavated. Many archaeologically blank areas between the Volga and Yenisei make it difficult to speculate on the beginnings of the Afanasjevo culture. There is, however, no doubt that the Afanasjevo and Bronze Age cultures of the Siberian steppes, the Andronovo and Tazabag'jab in the Aral Sea area, belong to the same Kurgan family and are represented by the same physical type of people.

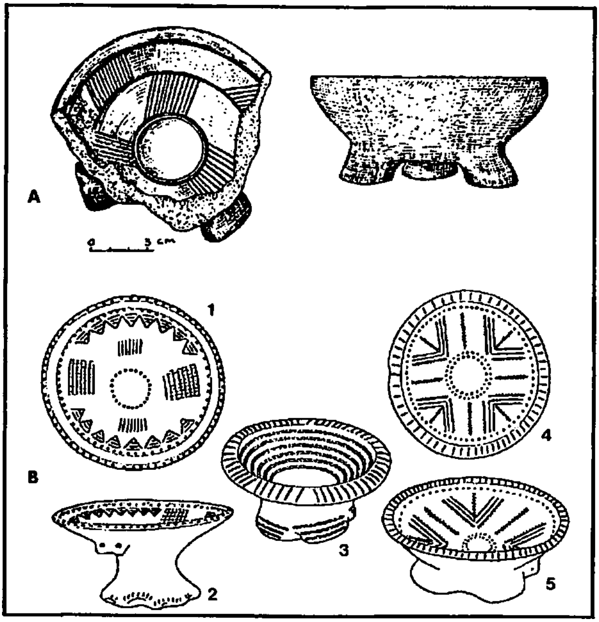

Fig. 20: A) Brazier – a dish standing on three legs – decorated inside with a solar pattern. From the upper stratum of Mikhajlovka. (*After* Lagodovska, Shaposhnikova and Makarevich 1962.) **B) Dishes (braziers) from the Vučedol sites in Bohemia and western Slovakia: 1-2) Bylany, Bohemia; 3) Iža, Slovakia; 4) Abrahám, Slovakia.** (*After* E. Neustupný 1966.)

Chronology and Expansion

The above sketch of the general character of the Kurgan culture depicts the 5th, 4th, and 3rd millennia BC. The basic elements continued throughout the three millennia north of the Black Sea, were transmitted by expansions to Europe and the Near East, and more or less conservatively persisted in separate Indo-European groups throughout prehistoric and historic periods.

In spite of many uncertainties and a lack of carbon-14 dates for most of the chronological phases of the Kurgan culture in the steppe region until recently, archaeologists attempt classification of present materials on the basis of stratigraphy, typology, commercial relations, and a few carbon-14 dates. In my paper of 1965 (Gimbutas 1965a), I gave a provisional chronological scheme of the Kurgan culture during the Chalcolithic stage, dividing it into Early (Kurgan I) – 4th millennium BC –, Middle (Kurgan II and III) – 3rd millennium up to *c.* 2200 BC –, and Late (Kurgan IV), which covers the end of the 3rd and the beginning of the 2nd millennium BC. I am advocating now, on the basis of the dates obtained by carbon-14 analysis, a *higher chronology* than the one I have used in my previous articles. The number of carbon-14 dates has increased, and they do not contradict the evidence obtained from stratigraphies and typologies. The current attempts to elaborate the radiocarbon dating method make dates higher. In this article I use tree-ring calibrated radiocarbon dates based on Dr. Suess' correction curves (Suess 1967a:143-151, 1967b).

The relative chronology of each of the periods can he established through contacts with the west, in particular with the Cucuteni-Tripolye culture.

To simplify the chronological scheme the following subdivision is given:

1. **EARLY KURGAN** or **KURGAN I** north of the Black Sea precedes the infiltration into (Danubian) Europe and the Near East;
2. **MIDDLE KURGAN** is the period of continuous waves of expansion, subdivisible into early and late phases, the Kurgan II and Kurgan III periods.
3. **LATE KURGAN** or **KURGAN IV** is the last period of a relatively uniform culture before the crystallization of Bronze Age cultures in Europe.

The Early Kurgan (Kurgan I) Period, 5th Millennium BC

The beginnings of this period are not yet clear and an absolute date for the boundary between the Neolithic and Chalcolithic stages is impossible to establish without carbon-14 dates. From the data presently available to us, a date in the second half of the 5th millennium BC may be tentatively suggested. Early Kurgan finds have been shown to be contemporary with the Tripolye *A* and *B*I (which equals the Pre-Cucuteni III and Cucuteni *A* phases in Romanian Moldavia) and Late Dnieper-Donets cultures. The mingling of finds belonging to three groups of different cultural background indicates the first encounter of the Kurgan people with the Cucuteni-Tripolye agriculturalists of the Balkan cultural bloc and with the Dnieper-Donets culture, the latter represented by massive European Crô-Magnon C type people with an admixture of Caucasoid elements, who must have settled along the lower Dnieper, the Sea of Azov, and the Donets River in an earlier period. The appearance of Kurgan materials in the lower Dnieper-Dniester basins indicates the first Kurgan advance westward.

In the terminology of Soviet scholars this is the early 'Srednij Stog II' culture. (They do not use the term 'Kurgan culture'; their 'Srednij Stog II culture' covers the Early and Middle Kurgan periods).[11] Pointed based pots were decorated with stabbing, incised lines, and shallow impressions made with a comblike stamp; there was no 'corded' pottery yet. Potsherds of this type were found in Cucuteni A_3-Tripolye *B*I settlements (Movsha 1961). Hăbăşeşti, a site of Cucuteni A_3 phase, yielded one carbon-14 date 3380 ± 80 BC. A tree-ring calibrated date is *c.* 4300 BC.

The Kurgan (or 'Srednij Stog II') people inevitably took over a large territory of the Ukraine and started their expansion to the Balkans. This terminates the Early Kurgan period.

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[11] The information about the "Srednij Stog culture" comes from D. Ya. Telegin (1965). The early S. Stog II culture is known from several habitation sites (Stril'cha Skela, Kvitjana, Pokhilij I) containing earlier materials than the name-giving site.

The Middle Kurgan (Kurgan II and III) Period, 4th Millennium BC

This can be subdivided into two phases:

KURGAN II, during which Kurgan sites are found in the whole North Pontic area, and their traces appear west of the Black Sea in the Ukraine, Romania, Yugoslavia, and eastern Hungary. This period is parallel to Cucuteni *AB* (Tripolye *B*II).

KURGAN III is the climax of expansions and conquests in the Balkano-Danubian area, and is parallel to Cucuteni *B* (Tripolye *C*I). At this time the Kurgans appeared in the Near East.

North of the Black Sea, forested conditions prevailed. There was considerable forest fauna and freshwater fish.

KURGAN II, *c.* 4000-*c.* 3500 BC. Materials from this period demonstrate continuous coexistence with the Dnieper-Donets culture: two different physical types (both of 'Crô-Magnon C' type, but with the Kurgan People being more gracile) and burial customs (collective burials in trenchlike pits characteristic of the Dnieper-Donets culture, and single burials of Kurgan type) were proved to be present even in the same villages. The Dnieper-Donets culture seems to have disintegrated during this phase. To the same phase belongs the settlement of Srednij Stog II which overlies the remains of a Dnieper-Donets village (Srednij Stog I). The existence of large cemeteries of the Mariupol type with long trench graves containing many skeletons in an extended position, north of the Sea of Azov and in the lower Dnieper area, ended. This type was replaced by graves in stone cists or in pits under low earthen or stone barrows (in Russian called *'kamjanye zakladki'*) which covered single burials. The dead lay on the back with slightly contracted legs and were equipped with flint points and arrowheads of triangular or rhomboid form, long flint knives, stone celts, battle-axes, boar's tusk necklaces, beads made of shells of perforated animal teeth (usually deer's), copper awls, bracelets, and pendants. The grave type contrasts sharply with that of the Dnieper-Donets culture, but some flint objects resemble in form and technique those of the Dnieper-Donets and Cucuteni *AB* (Tripolye *B*II) cultures. Pointed bottomed pots of this phase were ornamented by stabbing, scratching, and impressions with a comblike instrument. Cord impressions were not applied yet, which shows that this technique of pottery decoration was not specifically 'Kurgan'. Its appearance was actually due to influence of the Dnieper-Donets culture.

The same type of grave appeared in the steppes west of the Black Sea, in the Danube Plain as far as northeastern Hungary, and in the northern and eastern Caucasus. In the entire area between the Black Sea and the River Tisza in eastern Hungary, many barrows with shaft graves and wooden constructions of oak or beech wood, containing skeletons lying on their backs with slightly contracted legs (Fig. 21), have been discovered in the course of the last hundred years (Kalicz 1967; Gazdapusztai 1966-1967). Since the graves were poorly equipped, not much attention was paid to the study of their chronology. From the grave architecture, position of the skeletons, deposition of a piece of red ochre the size of an egg, presence of horse, cattle, calf, sheep or goat, and bones (and in one case a bear's skull), it is seen that many of these barrows represent the Kurgan II and III types and thus are actual testimony of the intruders' presence in east central Europe.

In Transylvania, this period is represented by the cemetery of Decia Mureşului in the district of Torda-Aranyos and in the northern central Caucasus by the cemetery of Nal'chik (Kovács 1944; Gimbutas 1961:195; Kutzián 1963). A clay (marl) figurine in the cemetery of Nal'chik has close parallels in Cucuteni *AB* (Tripolye *BII*) villages. On the other hand, a copper shaft-hole axe and a stone macehead decorated with four semi-globes found in the Decia cemetery of Transylvania have close parallels in the sites of the Tiszapolgár culture of northern Hungary and Slovakia and in the latest (Mariupol) phase of the Dnieper-Donets culture. This places the Kurgan II period in the first half of the 4th millennium BC on the basis of its contemporaneity with the Tiszapolgár and Cucuteni *AB* complexes.

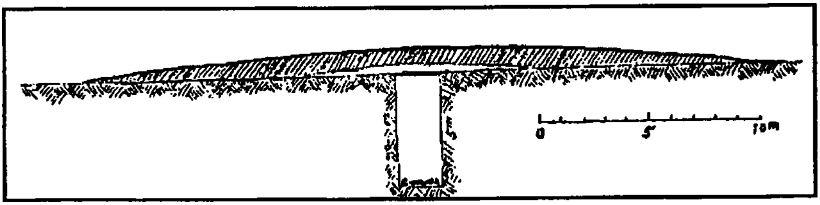

Fig. 21: Cross-section of a kurgan (no. 1) near Constanţa at the Black Sea, Romania. (*After* Schuchhardt and Traeger 1918.)

KURGAN III, *c.* 3500-3000 BC: Kurgan III material is well defined stratigraphically. In the lower Dnieper region, it is represented in the Mikhajlovka II layer. In Russian terminology, it is called Early 'Yamna' (Early Pit-grave culture) or late 'Srednij Stog'.

The whole Pontic area was now dominated by the Kurgan peoples alone. The number of Kurgan sites increased remarkably.

During this period the Kurgan people spread their roots in eastern central Europe and the whole Balkan area down to Macedonia by demolishing the high Chalcolithic-Copper Age cultures, and they entered Transcaucasia, Anatolia, and northern Iran.

Revolutionary changes in Bulgaria, Romania, Yugoslavia, Hungary, Czechoslovakia, and southern Poland show that people of a different background imposed their ways of life on the autochthonous peoples. Kurgan elements become numerous during the Cucuteni *B* phase in Moldavia and the western Ukraine, while the Gumelniţa culture in Dobrudja, southern Romania, and Bulgaria ended during Gumelniţa III (Vajsová 1966:37; Petrescu-Dîmbovita 1965:248ff; Dumitrescu 1957). Other cultural groups also slowly disintegrated: the *Salcuţa* in western Bulgaria and southwestern Romania, the *Vinča* in central and southern Yugoslavia; the *Bodrogkeresztúr* in eastern Hungary, eastern Slovakia and northwestern Romania; *Lengyel* in northern Yugoslavia, western

Hungary, lower Austria, western Slovakia, Moravia, and southern Poland; *Butmir* in Bosnia; and *Hvar* in Dalmatia. These flourishing agricultural groups in east central Europe of the 5th millennium were replaced in the 4th millennium BC by a culture composed of elements typical of the Kurgan culture north of the Black Sea mixed with elements of the substratum culture or elements from western Anatolia. To archaeologists, this new culture is known by many names: Early Bronze Age or *Ezero* in Bulgaria and Macedonia, *Cernavoda* in eastern Romania (Dobrudja), *Coţofeni* in Transylvania, *Gorodsk-Usatovo* in the western Ukraine, *Proto-Baden* or *Boleraz* in Hungary, northern Yugoslavia, Lower Austria, southern Germany, Czechoslovakia, and southern Poland, succeeded by the *Baden-Pecel* or *Channelled Pottery* complex. These groups are so much interrelated that they could all very well be given one name, such as 'Balkano-Danubian cultural unit' (Berciu 1964). Materials of this culture are well documented in many stratified sites, for instance in the famous Bulgarian mounds of Ezero and Karanovo. The Ezero 'Bronze Age layer' of 4 meters and nine building levels indicates a long cultural existence (Georgiev and Merpert 1966). In Romania, two carbon-14 dates have been obtained from samples taken from fortification ditches of a settlement at Dealul Sofia near Cernavoda in Dobrudja: 2555 ± 100 and 2435 ± 100 (Berciu 1964). Their true age (calibrated with tree-ring chronology) is the second half of the 4th millennium BC. The same period is indicated by the dates obtained from the Early Bronze Age levels (Period IV) of the Photolivos-Sitagroi mound in Macedonia.

In this period, Kurgan elements infiltrated the upper Danube basin and gradually northern Europe, the territory of the Funnel-necked Beaker culture during its phases C and D.

There were numerous ties with the western, central, and eastern Caucasus during the Kurgan III phase, at which time the Kurgan peoples must have crossed the Caucasus mountains and dispersed to Azerbaidzhan, eastern and northern central Anatolia, and northern Iran.

The only Kurgan grave in Azerbaidzhan known so far is that from Uch-tepe in the Mil'ska steppe near the river Karkar-Chaja, excavated in 1961 by A. A. Iessen (1965). This was a typical Kurgan grave in a large deep shaft covered with timber planks. A piece of red ochre and sherds of a number of thin-walled and undecorated pots were found in the pit. The potsherds apparently fell into the pit after a funeral feast above the grave when the mortuary house was burned.

Two carbon-14 dates have been obtained from the Kurgan grave of Uch-tepe: one from a piece of wood, 2539 ± 120 BC, the other from a piece of charcoal, 2867 ± 230 BC (Iessen 1965). The calibrated dates indicate the second half of the 4th millennium BC.

The appearance of the Gray Ware culture in northern Iran in the period synchronous with the Early Dynastic period of Mesopotamia (*c.* 3000-2370 BC – see Thomas 1965:200) and the displacement of elements of the older culture in the tells of northern Iran (Hissar II, Tureng Tepe, Shah Tepe) was probably in connection with the movements of the Kurgan peoples. The series of radiocarbon dates from the Gray Ware layer of Tureng Tepe fall into the period of the first half and middle of the 3rd millennium BC (information by J. Deshayes, 1969). If corrected, they belong in the second half of the 4th millennium BC.

Late Kurgan (Kurgan IV), 3rd Millennium BC

During this period, continuous waves of expansion or raids touched all of northern Europe (except the Arctic zone), the Aegean area (Greece and Anatolia), and the East Mediterranean area, possibly as far south as Egypt.

This is a period when almost all Europe possessed similar cultural elements which can be synchronized. It ended with progressively increasing cultural differentiation and the beginning of the Central European Bronze Age and the Middle Helladic period in Greece. The Late Kurgan period in the northern Caucasus is a full-blown metal age. Only north of the central European mountains did the culture remain in a Chalcolithic stage.

In the lower Dnieper area it is well represented in layer III of the Mikhajlovka hillfort. The fort was now considerably larger than Mikhajlovka II and was heavily fortified with ditches and massive stone walls. From this period date the aboveground houses having stone foundations and wattle and daub walls (Figs. 8 and 9).

The famous royal tombs of Maikop in the northwestern Caucasus and Alaca Hüyük and Horoztepe in northern central Anatolia, found in typically Kurgan grave constructions, may have belonged to Kurgan rulers. Generally, they are equated with Troy II and Early Dynastic III in Mesopotamia. These fabulous grave treasures reveal a remarkable ability to accumulate power and wealth. This suggests that the Indo-European kings were efficient rulers among the peoples who spoke other languages and who were of different cultural backgrounds (like the Hattic people in central Anatolia). We can surmise that at about the middle of the 3rd millennium BC most of the lands in Caucasus, Anatolia, and Iran, which in later periods are known to have been under the control of Indo-European kings, had already been invaded by the Kurgan people.

In my monograph of 1956, I called this phase 'The Hut-Grave Period' because of the remains of timber huts under earthen mounds. In fact, similar hut structures are evidenced in Middle Kurgan graves also. All over the western Caucasus and in the Crimea, mortuary houses were built of stone slabs. Classical examples of charnel houses, rectangular in plan, consisting of two rooms and having a gabled or flat roof, are known from the royal barrow of Tsarskaja ('Novosvobodnaja' in Soviet literature) in the River Kuban valley of the northwestern Caucasus (Fig. 12).[12]

During Kurgan IV times there appeared a peculiar type of burial in pit-caves, termed 'catacombs', in the Don and Donets river basins north of the Sea of Azov and in the lower Dnieper area. In many cases they were found as secondary burials in the earlier kurgans. Burial rites and grave contents place them in the

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[12] Excavated by N. I. Veselovskii in 1898. A full report, with illustrations, is to be found in T. B. Popova (1963). A summary and a few illustrations are given by Gimbutas (1956:59-61).

Kurgan family, though the burial in pit-caves, consisting of a shaft and an oven-shaped pit, suggests influence from the Cyclades or Sicily. This is not surprising, since the Kurgan people by now were well acquainted with many lands, including the Aegean and Mediterranean coasts and islands. There is an indisputable similarity between the North Pontic catacomb graves and those of northwestern Sicily around Palermo belonging to the Conca d'Oro culture and called there oven-shaped tombs, with shaft and chamber presumed to be of Aegeo-Anatolian origin (Bernabó Brea 1957:87-92). Not only is the grave shape in these two areas closely related, but also the manner of burial and the type of grave goods. Among these are red ochre, bone tools, small copper daggers, rings and bracelets, and pots decorated with ornamental motifs (cord impression, lines of incisions and dots) typical of the Kurgan IV period. The cave site of M. Cronio near Agrigento in southern Sicily had a layer containing pottery decorated in Kurgan IV fashion covering Diana and Serra d'Alto deposits.[13] Around Taranto, Brindisi, and Foggia in Apulia, a number of sites yielded pottery, flint, and bone tools of Kurgan IV character.[14] Catacomb-graves excavated in 1966 in Laterza near Taranto are nearly identical in shape with those north of the Black Sea (Biancofiore 1967). Grave goods included flint and bone arrowheads, stone arrow straighteners, perforated animal teeth, and other artifacts closely related to those in Pontic catacomb-graves. Decorative motifs on bowls, dishes, cups, and amphorae have a striking resemblance to those on catacomb-grave ceramics in the Pontic region and Kurgan IV pottery in the Vistula and Oder basins.

Marble, nephrite, serpentine, and other semiprecious stones were used by Catacomb-grave people for their maceheads and battle-axes. Silver was used for earrings or hair-rings, and greenish or white faience, carnelian, and mother-of-pearl for beads. All these materials indicate wide commercial contacts. Traces of local metallurgy were present all over the North Pontic area and metal types were highly influenced by the Kuban center of metallurgy during its 'Middle Kuban' stage. Solid wheels, whole vehicles (Fig. 22) and miniature models of two-wheeled carts are quite common finds in Kurgan IV graves; they could have served as hearses or were inhumed as symbols of a vehicle to the other world.

Some scholars think that the introduction of burials in pit-caves north of the Black Sea is an indication of the appearance of new people (Ozols 1962). During the Catacomb-grave phase there appeared such customs as artificial deformation and trephination of the skulls of upper class people. These practices were known in later periods to the people of Kurgan derivation but are so far not recorded from the earlier Kurgan periods. During this period, burial customs, except for the grave structure itself and the usage of barrows, remained the same as customs used in mortuary houses of timber and stone. Without the application of quantitative analysis and thorough studies of physical anthropological data, the problem of immigration of new people cannot be solved. The author sees as a possibility a reflux movement of the Kurgan people, not an incursion of non-Kurgan peoples.

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[13] Oral information by Dr. S. Tinè; 1962 excavation.

[14] Examples: Grotta S. Angelo, Ostuni (Brindisi) and Grotta della Scaloria, Manfredonia (Foggia); stratified cave sites above neolithic deposits contained strata with Kurgan IV pottery. Materials in Taranto Archaeological Museum.

The Kurgan IV movement proved to be connected with the Vučedol complex in the Middle Danube basin (northern and Adriatic Yugoslavia, Hungary, western Slovakia, and lower Austria), in which surprisingly similar cultural elements are found: hillforts, catacomb-graves, symbols, richly decorated braziers, etc. The Vučedol culture succeeds Baden and precedes the Bell Beaker complexes. During its classical phase, represented in the hillfort of Vučedol (Schmidt 1945), indubitable contacts with the eastern Mediterranean world, particularly with the final phase of Early Minoan and beginning of Middle Minoan Crete, are shown by exotic finds such as horns of consecration, altars, dove sculptures, engraving of double-axe symbols (Fig. 23), and the clay model of a four-wheeled wagon at Palaikastro in eastern Crete, decorated in much the same way as one altar in the Vučedol site (Fig. 24). We may surmise that it was not difficult for the Vučedol people to use the Adriatic and East Mediterranean waterways. Kurgan IV corded and Vučedol type white incrusted pottery was discovered in a stratified cave site at Gudnia, 55 miles north of Dubrovnik on the Adriatic coast of Yugoslavia.[15] This site, excavated in 1964-66, is another proof of the presence of Kurgan IV people in the Adriatic area and, indirectly, of their navigation in this sea.

The Bell Beaker complex, an offshoot of the Vučedol bloc (more precisely, of the Zók-Makó group in Hungary) continued Kurgan characteristics. The Bell Beaker people of the second half of the 3rd millennium BC were vagabondic horse riders and archers in much the same way as their uncles and cousins, the Corded people of northern Europe and Catacomb-grave people of the North Pontic region. Their spread over central and western Europe to the British Isles and Spain as well as the Mediterranean islands terminates the period of expansion and destruction.

Materials from barrows in the northwestern Caucasus, such as from the princely burials at Tsarskaja, Ul', and a series of rich grave inventories in the upper Terek region, indicate contemporaneity with the Akkadian, Post-Akkadian, and Ur III times in Mesopotamia, Carchemish graves, Hama J4 and Amuq J in Syria, and with Hissar III C in northern Iran. This covers the period from 2400/2300 to the beginning of the 2nd millennium BC. In the northern Caucasus this is the so-called "Middle Kuban period of metallurgy" following the period of Maikop and beginning with rich inventories of the Tsarskaja (Novosvobodnaja) royal tombs: tanged daggers, spearheads, shaft-hole axes, copper cauldrons, ladles, bidents, tridents, and human figures, gold and silver pins, rings, and pendants. Assemblages following the Tsarskaja phase are typified by hammer-headed pins. Hammer-headed pins were made of copper and

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[15] Excavated by S. Petrak. Finds are in Dubrovnik City Museum.

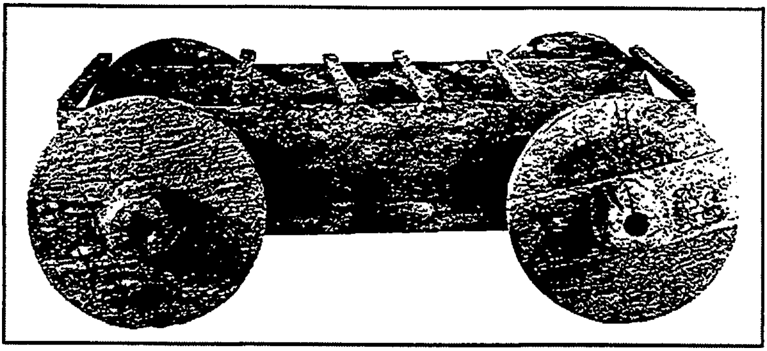

Fig. 22: Four-wheeled wagon from a catacomb-grave at Kudinov, lower Don. Relative date: 2300-2200 BC. Excavations by Melent'ev, Archaeological Institute, Leningrad.

were imitated in bone in the areas north of the center of metallurgy in the Caucasus and in central and northern Europe.

The first carbon-14 dates for catacomb-graves were obtained from the University of California at Los Angeles laboratory. The wood sample came from a catacomb-grave in a barrow at Kudinov, county of Bagaevo in the lower Don valley (Melent'ev 1965). The tree-ring calibrated radiocarbon age was shown to fall within *c.* 4200 and 4400 BP or *c.* 2250-2450 BC (Berger and Libby 1968). The sample was taken from a grave which included a tanged copper dagger (knife or razor) with a widening blade (as reproduced in Fig. 5) and a footed dish (similar to that reproduced in Fig. 20A).

Kurgan elements appeared in the territories of the northwestern European Funnel-necked Beaker culture, East Baltic Comb-marked Pottery culture, and Central Russian Pit-marked Pottery culture. The 'Corded Pottery or Battle-Axe culture', 'Single-Grave' (in Denmark) or 'Protruding Foot Beaker' (in Holland) culture continued to the beginning of the second millennium BC. There is a series of carbon-14 dates in the Netherlands and Germany obtained from samples of the corded pottery graves and settlements; they cluster around 2400-2200 BC (Van der Waals 1965:52) in radiocarbon years, which corrects to approximately 3000 BC.

The so-called "Pan-European Phase" of the Corded Pottery-Battle-Axe culture has now been proved to be not later than the middle of the 3rd millennium BC as indicated by the tree-ring and corrected carbon-14 dates obtained from the settlement at Auvernier near Geneva and regarded to be the most reliable dates so far. The "Auvernier layer" which contained corded sherds of the "Pan-European Corded-Battle-Axe Phase" gave the date of 2450 BC (Suess and Strahm 1970).

Corded pottery sherds, maceheads, battle-axe, and necklaces made of wild animal teeth, which appear in Early Helladic II-III sites such as Eutresis and Hagia Marina (Goldman 1931:122), or Hágios Mámas and Kritsaná in

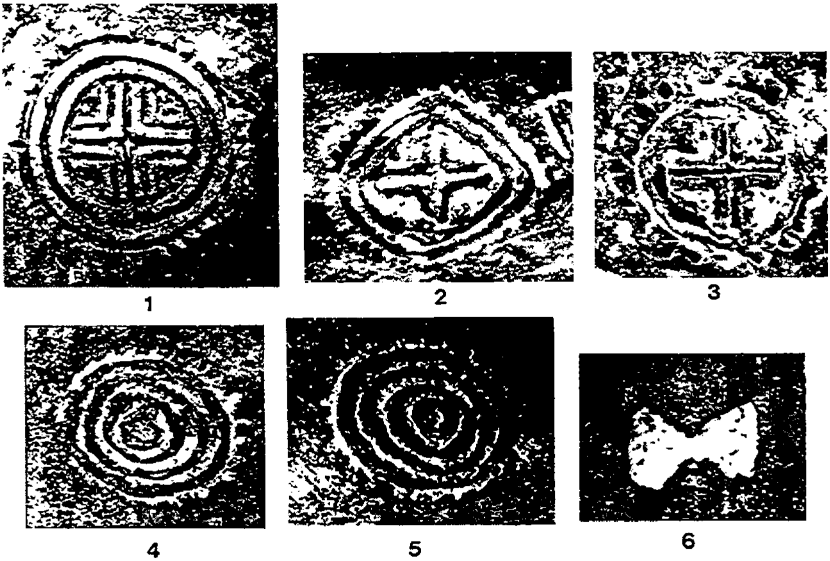

Fig. 23: Solar and double-axe (bottom, *right*) motifs incised and white incrusted on pots from the Vučedol period, Vučedol hillfort. (*After* Schmidt 1945.)

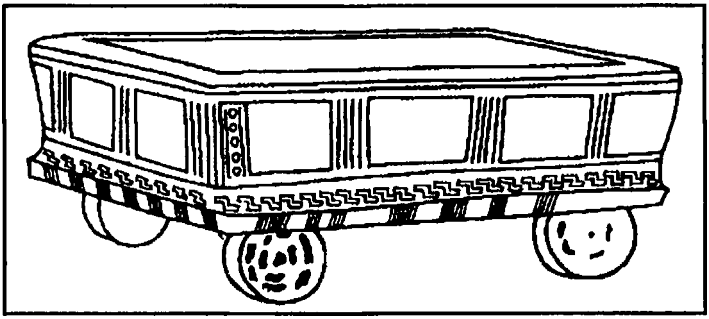

Fig. 24. Model clay wagon (with polychrome decoration) from Palaikastro, a Middle Minoan Ia site in eastern Crete. (*After* Evans 1935.)

Macedonia (Heurtley 1939:87, 199, figs. 46a, 64), are virtually identical to those known from Kurgan IV sites north of the Black Sea (for instance from Mikhajlovka III) and also to those from Kurgan IV sites in central and Baltic Europe.

Around 2300 BC, destruction is traceable in Anatolia and in the Aegean area. This marks the end of an era in the Aegean world. During this phase in

Greece the Early Helladic II settlements of Lerna,[16] Tiryns, and Asine were destroyed, as were Troy II, Polatli II, Beycesultan XIII, Tarsus, and others in Anatolia. Widespread destruction is followed by an overall decline in material culture and evidence of settled occupation becomes rare. This destruction in Western Anatolia is possibly connected with the invasion of Luwian speakers (Mellaart 1960, 1962a, and 1962b).[17]

The next territory where changes in cultural developments may have been caused by invasions of the Kurgan people was Syro-Palestine. The Palestinian archaeologists unanimously agree that at the end of the Early Bronze Age in Palestine there is a complete and absolute break in which the town-dwellers were succeeded by seminomadic pastoralists who had no interest in walled towns. According to Dr. Kenyon, from at least the 24th to the 20th centuries BC Syria and Palestine were overrun by nomads, among whom the Amorites predominated (Kenyon 1966).[18] Since the destruction of cities was completed during the course of the 23rd century, and as there is no evidence of Amorites which takes us back past the 21st century BC, the actual destroyers of the Syro-Palestinian towns very probably were not Amorites but Proto-Indo-Europeans. To the end of the Early Bronze Age and the Intermediate Bronze Age period belong barrows of Kurgan appearance known from the Levant as far south as the Negev desert in Israel.[19] Research on these barrows has only recently begun, but there is already good evidence that most of the cultural elements and finds are Kurgan. Some evidence comes from Bâb edh-Dhrâ in Jordan (Lapp 1966:98), a walled town on the eastern shore of the Dead Sea, which was destroyed about 2300 BC or slightly later. Near the city was a cemetery which included graves of several periods. Tombs contemporary with the Early Bronze Age town were of charnel house type. These occasionally contained copper daggers and battle-axes, which may suggest the presence of the Kurgan people in the area of the Dead Sea before the destruction of towns. The later graves, dating from the post-destruction period, were of shallow cist type covered by a stone barrow containing single burials in a contracted position, unpainted pottery, copper daggers, and stone axes. These contrast sharply with the multiple burial tradition and the red slipped and burnished pottery of the previous phases.

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[16] There are four carbon 14 dates for the destruction period of Lerna, three from the so-called House of the Tiles: (1) 1890 ± 72 B.C..; (2) 2030 ± 66 B.C..; (3) 1990 ± 68 BC.; and (4) 2120 ± 72 B.C. The dates are listed by S. Weinberg (1965:311) (adjusted for a half-life of 5730 ± 40).

[17] Mellaart's (1960) hypothesis of an expansion by the Gumelniţa people into Western Anatolia as connected with the destruction period is not tenable; *ibid.*, Anatolia, *c.* 4000-2300 BC, *Cambridge Ancient History* I. §l, 5, 18; *ibid.*, Anatolia, *c.* 2300-1750 BC., *Cambridge Ancient History* I. §XXIV.

[18] A good summary of various views on the eclipse of the Early Bronze Age culture is given by Paul W. Lapp (1966).

[19] The author saw barrows of Kurgan appearance during her 1965 visit to Israel at Har-Yeroham, 32 km. south of Beer-Sheba. The barrows stand in a row on the edge of a hill. The excavations at Tel Yeroham are reported in Yediot XXVII (1963). Moshe Kochavi (1967) has completed a dissertation on this intermediate period or the beginnings on the Middle Bronze Age in southern Israel. This study gives detailed information on the question.

The graves of Bâb edh-Dhrâ can hardly be linked with the Amorites, nor can many other tombs from this period which we shall mention below. In fact, archaeological remains of the Amorites are not known; their existence is attested only by written records.[20] The tradition of building house-like stone cists covered by barrows is known from the northern Caucasus. Close parallels are house graves built of stone slabs at Tsarskaja in the River Kuban basin, which succeeded the Maikop royal barrow and should date from around the 23rd or 22nd centuries BC. Shaft-hole axes and tanged spearheads found in Tsarskaja and related sites in the northern Caucasus are known from the north Syrian Karchemish graves, the tell of Til Barsip, and from level J4 of the Hama tell which is the first level after destruction. This confirms the above-mentioned date for Tsarskaja. Many other western and northeastern Caucasian as well as Crimean stone cists are also similar. In addition to the Kurgan dispersal along the eastern Mediterranean coasts, there were movements of the Caucasian, non-Kurgan peoples represented by the diffusion in Syro-Palestine of the Khirbet-Kerak complex, which is a part of the east Anatolian-Transcaucasian Early Bronze Age culture (Amiran 1952, 1963). Their migrations apparently were connected with the disturbances caused by the Kurgan people. Not without connection are Mesopotamian legends ascribing the weakening of the Akkadian empire to some strange northern tribes, which enabled the Gutians to destroy it entirely and lay the land bare for about one hundred years during the 23rd and 22nd centuries BC.

Other colonists in Palestine not unrelated to the Kurgan people are known from Jericho, where Kathleen Kenyon has excavated 177 catacomb-graves (or pit-caves) at the famous tell (Kenyon 1965). Similar tombs are also known at the Ajjul, Duweir, and Megiddo tells. As yet, no one has thought to link these graves with the Kurgan culture, but the people buried in them are regarded by Dr. Kenyon to have been pastoralists rather than agriculturalists and definitely not town dwellers; they lived on the sites of earlier towns but contributed nothing to their development. To this author, the catacomb-graves of Jericho are surprisingly similar to those known from the area between the Dniester and the Kuban rivers, north of the Black Sea, and to those sporadically known from Sicily and northwestern Yugoslavia. The excavator has subdivided them into square-shaft type, dagger type, pottery type, bead type (or poor graves), and outsize type – a subdivision which would also be applicable for the Pontic graves. It indicates social stratification, sex, and age differences, and special burial rites involving animal sacrifices and other customs (the latter connected mainly with outsize type graves). To the last detail many of the Jericho graves repeat the elements of the Pontic graves: the size and the shape of the grave (Fig. 25), the position of the dead, and the contents and placement of grave

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[20] Lecture on the Amorites on May 19, 1967 at UCLA and also oral information by Marilyn Buccellati.

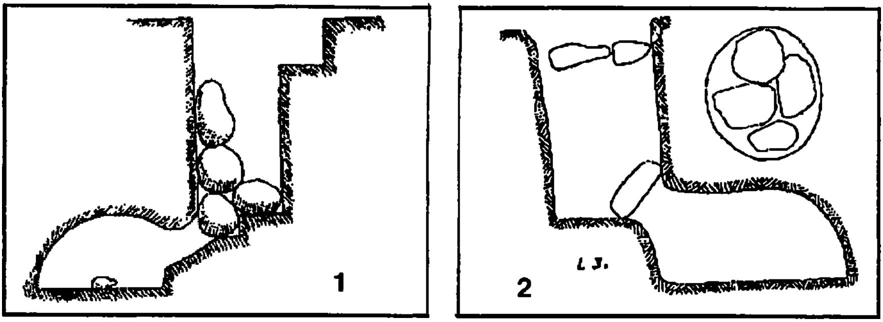

Fig. 25: Catacomb (or pit-cave) graves from 1) the Black Sea area, and 2) Jericho, Jordan. (*After* Gorodtsov 1907; Kenyon 1965.)

equipment. The dagger was the most usual metal weapon in Jericho as it was in male graves of the Kurgan culture in Europe (if not a copper dagger or knife then there was a flint dagger or knife placed near the hand). In warriors' graves in Jericho copper or bronze fittings were found, some of which were shown to have belonged to wooden shields. The shield and dagger (or sword in the later Bronze Age) remained characteristic of warfare throughout the many centuries of prehistory and history of the Indo-European tribes.

In rich male graves at Jericho appeared copper head bands, pins, and bead necklaces of carnelian, crystal or blue, white, or pinkish paste as in Kurgan upper class or chieftains' graves. Fragments of linen, wood, baskets, skin, and leather (in one case a leather purse) indicate the existence of additional grave equipment with perishable materials, a fact well evidenced in the graves of Pontic pastoralists. Brown powder found in the earth may indicate traces of food offerings. Sheep or goat bones were quite usual in Jericho, graves as they were in catacomb-graves, placed as symbolic offerings for the dead after the funeral feasts. A sample of bread from a tomb in Jericho was of a substance believed to be millet. Millet grains, as has already been mentioned, were found in Kurgan IV graves north of the Black Sea; two pots were frequently placed at the entrance to the catacomb, one filled with millet grains, the other probably with burned meat as indicated by the remaining dark-brown substance. Bulging vessels from Jericho graves usually with flat bases, with or without handles, were certainly not imported, but their decoration with a row of incisions around the shoulders links them with the simple Kurgan style. Daggers, javelins, and probably all other metal objects obviously were not imported from distant lands, and definitely not from the Ukraine; their shapes were typical of the Anatolian-east Mediterranean traditions during the last centuries of the 3rd millennium BC.

A number of Jericho skulls were trephined. The round trephine holes are the same as commonly found in cases from catacomb-graves north of the Black Sea and from Bell Beaker graves in Europe. The examination of skeletal materials from Jericho has indicated that these people were distinctly different from the early Mediterranean and Near Eastern populations. They were tall-statured (mean estimated stature for men 170.32 cm.), with skulls within the limit set for dolichocephaly. The head was moderately high in relation to its length and high in relation to its breadth. Their facial characteristics were mesoprosopic with mesorhine noses and chamaeconchic orbits. Although studies of skeletal materials of Kurgan people in Europe and the Near East are not yet sufficient, a general relationship can be seen between the Jericho population buried in pit-caves and the catacomb-grave people north of the Black Sea. This is the Crô-Magnon C type.[21]

The above-mentioned period of pit-cave burials at the Jericho mound is labeled by Dr. Kenyon as Intermediate Early Bronze-Middle Bronze Period. It corresponds to the First Intermediate of Egypt which is associated with the movements of Asiatic peoples responsible for the breakup of the Old Empire of Egypt. Perhaps it would not be irrelevant to mention here the fact that among the portrayals of Asiatics on Egyptian monuments dating from before the 20th century BC, there is evidence of Asiatics without Semitic features (Lapp 1966).

If the invaders in Palestine can be identified with the Pontic Late Kurgan catacomb-grave people, then the Kurgan IV peoples can be regarded as Peoples of the Sea who raided and settled East Mediterranean islands (Sicily, Crete, Cyprus) and coasts (Apulia, Greece, western Yugoslavia, Western Anatolia, Palestine, and Egypt), just as their successors did one thousand years later, around 1200 BC.

With the Late Kurgan migrations ended the long cycle of movements which had continued for nearly 2500 years and through which the common Indo-European language was disseminated from a limited area to the whole continent of Europe and many parts of the Near East. During the period of wanderings their language must have gone through a process of increased differentiation and during Late Kurgan times, we may guess, there existed many dialects and even languages. Europe and parts of the Near East became culturally transformed. The next stage was the formation of separate individual cultural units, many of which continued Kurgan characteristics up to historic times and continue to the present period.

The reasons for the Kurgan explosion were obviously based on economics and social structure, and throughout the many centuries their continuous need for expansion fermented the psyche of the vagabonds. Herodotus characterized this psyche in his description of the Thracians, to whom to live by war and plunder is of all things the most glorious (Herodotus V.6).

Conclusions

In reference to Proto-Indo-European culture, the archaeological evidence shows the following:

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[21] Oral information by Dr. J. Nemeskéri, 1966.

1. The Kurgan culture in the Pontic and Volga steppes of the 5th and 4th millennia BC was fairly homogeneous. Therefore it can be regarded as a proto-culture of all later Kurgan manifestations in Bronze and Iron Age Europe and the Near East.

2. The process of its formation is not yet clearly demonstrated by archaeological data. The present evidence shows three or four Mesolithic and Neolithic culture groups north of the Black Sea. The Kurgan culture most probably developed from a Mesolithic group in a limited geographical area between the Don River and the southern Urals.

3. During the 5th millennium BC the Kurgan people were in possession of domesticated horses, and the vehicle was probably introduced to the steppe area in the 4th millennium BC.

4. Kurgan elements in economy, habitation pattern, social structure, and religion fully agree with the common words in Indo-European languages which have been used by linguists for the hypothetical reconstruction of the mother culture.

A. **ECOLOGY AND ECONOMY.** Floral and faunal remains from the early Kurgan period, which extends from the middle of the 5th millennium to the start of the fourth, show a splendid coincidence. In the list of trees there are the following: oak, birch, fir, elder, elm, ash, aspen, willow, and beech. In the list of wild animals there are aurochs, elk, boar, wild horse, bear, wolf, fox, beaver, squirrel, and badger. There were also snakes and frogs. All these remains indicate forested conditions and a damper and warmer climate in the Pontic steppe area than at the present time. All domesticated animals – sheep, ox, steer, cow or cattle, pig, and horse – are evidenced. Cattle and horse-raising was the principal economic activity. This agrees very well with the linguistic reconstruction: agriculture coupled with stock-breeding. Grain or 'seed' [**sēmn̥*]is attested. The wooden ard [from the root **ar(ā)*] was probably used universally. They reaped [**kerpō*] their harvests. Wool and flax were known.

B. **TECHNOLOGY.** The Kurgan people were using objects made of pure or arsenical copper from the 4th millennium onward. (A copper and tin alloy was not known to them; hence they were not acquainted with bronze.) It is not surprising that there is no one Proto-Indo-European word for 'metallurgy'. Metal could have been borrowed first from the Balkano-Danubian area via the Cucuteni-Tripolye and the Dnieper-Donets cultures, and, in the 3rd millennium BC, from the Near East. [**roudhos* could well be derived from the Sumerian *urud(u)*]. The usage of vehicles well agrees with the existence of the root **veĝh* in many Indo-European languages, as well as with words for wheel, axle, yoke, pole, lynch-pin, and nave. Common words for boat, rudder, and oar indicate the usage of boats. The latter are not proven archaeologically because wooden objects require special conditions for preservation, but it can be surmised that the Kurgan people used their rivers for navigation and that from the beginning of their expansion they navigated in the Black Sea and also in the Aegean, Mediterranean, and Adriatic seas. Both language and archaeology show that the Kurgan people were fairly mobile.

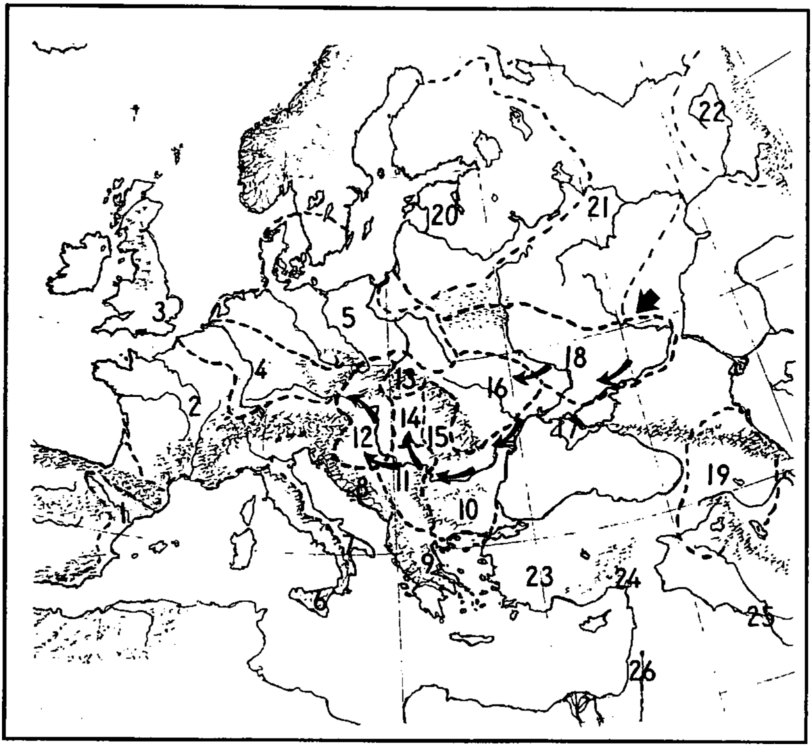
C. **SOCIAL STRUCTURE.** The presence of hillforts [Greek *polis,* Lithuanian *pilis,* Sanskrit *pur-as]* with royal houses or palaces and living quarters for the ruling class, and of small villages in the vicinity of the tribal center, conforms with the linguistic evidence which indicates that early Indo-European society was divided into castes, the warrior nobility and laboring. The stratified society is proved by the earliest Greek, Hittite, Indo-Iranian, and Roman sources.

Studies in Proto-Indo-European kinship have shown that Proto-Indo-European culture had patriarchal, patrilocal families that probably lived in small houses or huts. Villages were small and presumably exogamous. Both internal and external evidence for patriliny is excellent. The whole system seems to be typical of the patrilineate in its most highly developed form (Friedrich 1966). Archaeological data does not contradict this reconstruction; on the contrary, it supports it.

D. **RELIGION.** Elements in the religion of the Kurgan people suggest the existence of a thunder-god, sun, fire, horse, bull, wolf, dog, boar, and snake cults, very strong belief in life after death, frequently practiced animal and human sacrifices, and not highly developed ceremonialism. No real sanctuaries have ever been found; they probably had open sanctuaries. Although the archaeological reconstruction of religion cannot be complete, the data available splendidly agree with the ancient elements of Indo-European mythology reconstructed on the basis of comparative mythology and linguistics.

5. The increasing herds and population, the appearance of vehicles and fighting carts, and the use of horses for riding obviously were decisive factors for the expansion of the Kurgan warrior nobility. The following stages of expansion can be recognized:

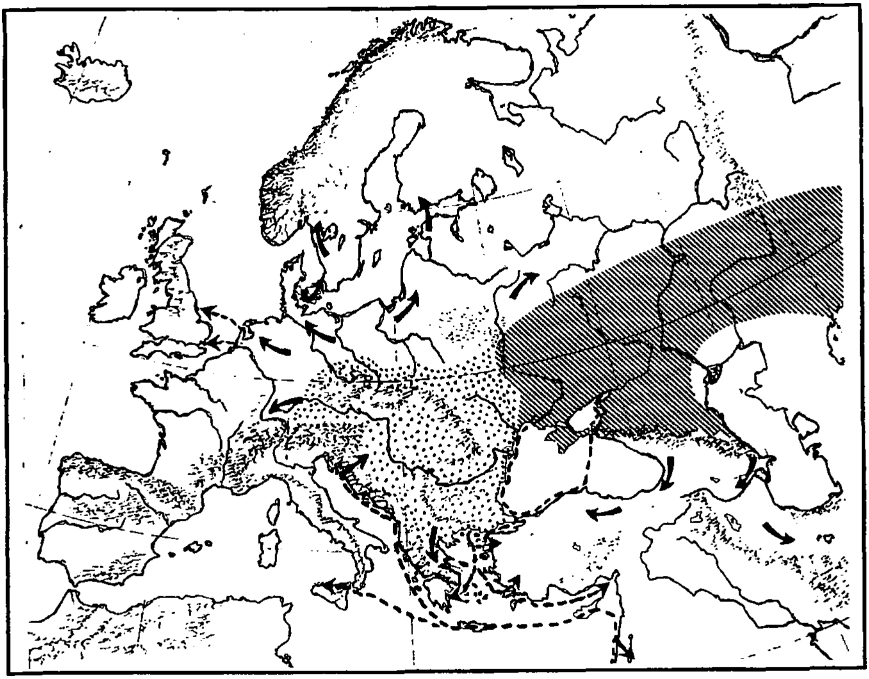
a. Expansion to the Balkano-Danubian area in the first half of the 4th millennium BC (Maps 1 and 2) and subsequently to northern Europe.
b. Expansion to Transcaucasia, Iran, and parts of Anatolia during the second half of the 4th millennium BC.
c. Raids and/or expansion to the Aegean and Adriatic area and to Syro-Palestine and possibly Egypt around 2500-2200 BC.



Map 1: European and Near Eastern cultures during the 5th and 4th millennia BC, and the Kurgan infiltration (arrows) into the Danube basin in the first half of the 4th millennium BC.

Key: 1) Western Neolithic groups in the Iberian Peninsula (Fossa graves, Almeria, Alicante); 2) Western Neolithic Chassey (France) – Cortaillod (Switzerland) Lagozza (Liguria) complex; 3) Western Neolithic Windmill Hill; 4) Michelsberg; 5) Funnel-necked Beaker (TRB) complex and its relatives in central Germany and western Czechoslovakia; 6-8) Circum-Adriatic Neolithic culture: 6) Sicilian; 7) Southeast Italian, and 8) Danilo-Hvar-Butmir groups; 9) Late Neolithic (or Chalcolithic) of Greece (including Dimini Rakhmani, Larisa in Thessaly); 10) Gumelniţa; 11) Vinča; 12) Lengyel; 13) Bükk 14) Tisza and Tiszapolgár-Bodrogkeresztúr; 15) Petresţa; 16) Cucuteni-Tripolye 17) North Pontic; 18) Dnieper-Donets; 19) Caucasian (also called "Kuro-Araks," "Eneolithic," "East Anatolian Early Bronze Age," and "Kirbet-Kherak."); 20) East Baltic Comb-marked Pottery culture (or "Narva"); 21) Central Russian Pit marked Pottery culture; 22) East Russian–Middle Ural; 23) West Anatolian Chalcolithic (Beycesultan); 24) Cilician, Tarsus, and North Syrian Late Chalcolithic (Mersin XII-XVI; Amuq E,F); 25) Mesopotamian culture during the Ubaid and Uruk Periods; 26) Chalcolithic in Syro-Palestine (Ghassulian, Late Chalcolithic Jericho).

Note: The word "expansion" should be understood as an "infiltration" performed by Indo-European warriors who subsequently formed a super-stratum in conquered lands.



Map 2: Kurgan culture during the 4th and 3rd millennia and the climax of expansions. *Solid gray area:* **Kurgan culture in the Eurasian steppes.** *Dotted area:* **The area infiltrated not later than 4000-3500 BC.** *Arrows* **show tentative movements after** *c.* **2500 BC.** *Disconnected line and arrows* **indicate possible sea-ways, raids, and destruction at** *c.* **2300 BC.**

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Old Europe *c.* 7000 - 3500 BC: The Earliest European Civilization before the Infiltration of the Indo-European Peoples[*]

An 'Old European' civilization, possessing urban townships, a written script, and intricately ornamented temples, flourished in southern Europe prior to the infiltration of the Indo-European peoples during the 4th and 3rd millennia BC. Archaeological evidence indicates that the invaders were a warrior people who constructed fortified acropolises and established themselves as a superstratum over the indigenous population.

This article will focus on those areas in southeastern Europe – the Danubian region, the Adriatic and Aegean islands, and southern Italy – where the earliest developments toward civilized life began in Europe, at about 7000 BC, and continued for more than three thousand years, until 3500 BC.

A time period around 3500 BC forms a caesura between Old Europe and Indo-European Europe. It is a time when life in the large villages and townships either stops or is markedly changed. It is at this time – the first half of the 4th millennium BC – that the first eruption into the Danubian and northern European plains of the Kurgan or Proto-Indo-European peoples from the lower Volga-lower Don steppe is dated (Gimbutas 1970). The degenerative changes in the settlements of the Old European Civilization may be assumed to indicate the beginning of the Indo-European presence. A study of the Old European substratum is therefore indispensable to an understanding of the formation and differentiation of the earliest Indo-European groups in Europe.

Terminology

Soon after the introduction of a food-producing economy during the 7th millennium BC, southeastern Europe solidified into a cultural bloc with roots and an identity of its own. This was a culture complex fully entitled to consideration as an independent entity. It was not a provincial reflection of Near Eastern developments but a civilization fully equal to those of Mesopotamia and Anatolia during the relevant time span. The persistence of the orientalist's explanation of culture changes in terms of "imports" and "migrations" is

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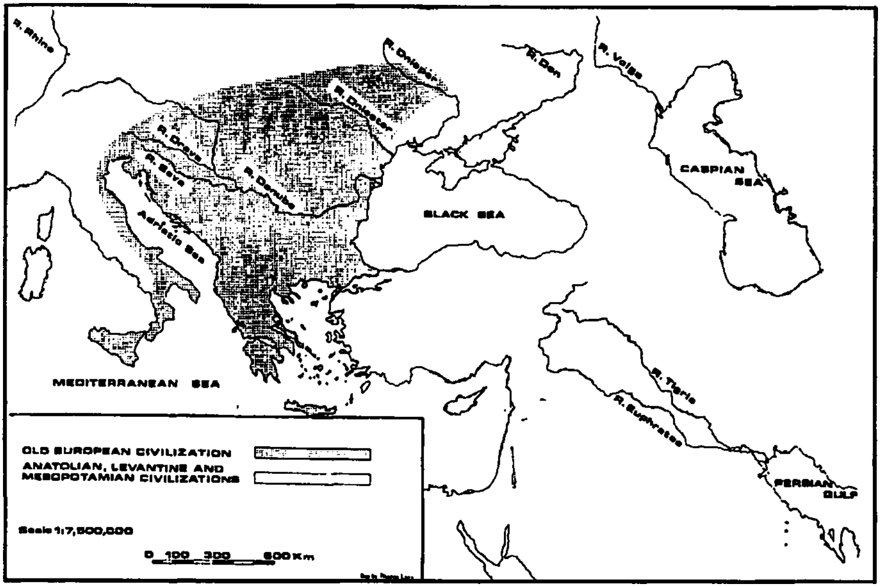
[*] This article was first published in 1973 in *JIES* 1(1):1-20.

therefore to be considered unjustifiable. The culture changes in question cannot be demonstrated to be due to migrations, but rather to the interchange of ideas through the intensification of commerce and communication.

Recent and outstanding discoveries demand a re-assessment of our conceptions of southeastern Europe. The existence of townships, of a script, and of temples and shrines with cult equipment and figurines amounting to some thirty thousand examples, provides evidence of organized religious beliefs and of a highly developed ceremonial structure.

In order to recognize this area of southeastern Europe as a separate entity in the family of Old European Civilization and also to distinguish it from Ancient Europe (a term usually employed to denote Classical Greco-Roman Civilization), and from Prehistoric Europe, I have recommended the use of Old European Civilization proposed in 1971 during the VIIIth International Congress of Prehistoric and Protohistoric Sciences in Belgrade (Map 1).



Map 1: The Old European civilization as a part of the Old World at its maximum extension during the 5th millennium BC.

Chronology

The use of radiocarbon dates and their conversion to true age on the basis of the calibration to tree-ring chronology has caused a revolution in our understanding of the birth and fall of the earliest civilization of Europe. Over three hundred radiocarbon dates are available for the Neolithic and Chalcolithic of this area. These provide essential data for the chronological frame of the many known cultural complexes. The chronology used in this article is not in radiocarbon years but in approximate true age (see Chronological Table).

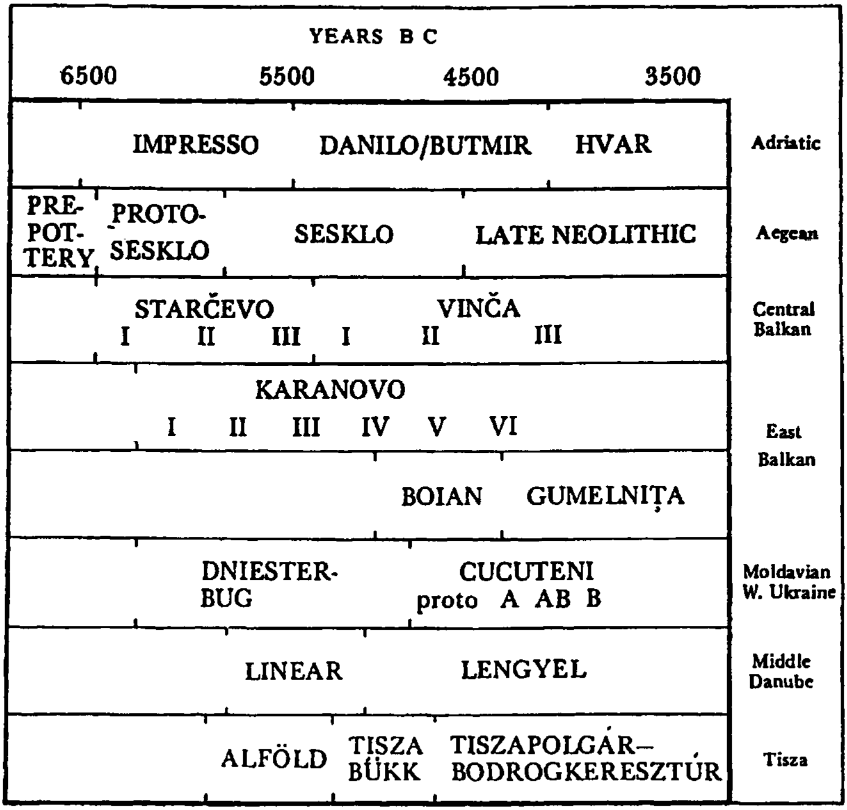


Table 1: Chronological Table of the Old European Civilization

The Beginnings, *c.* 7500-6500 BC

Effective village farming simultaneously diagnosed by the 'Wheat-barley sheep-goat-cattle-pig complex' appears in coastal Greece, in coastal Italy, in Crete, in southern Anatolia, in Cilicia, Syria, Palestine, and in the Fertile Crescent at approximately 7000 BC or before.

There is no evidence on the basis of radiocarbon dates that this complex appeared later in Greece than it did in the Fertile Crescent or in Syria, Cilicia, and Palestine (the revised dates for the pre-pottery layers of Knossos in Crete and of Argissa and Sesklo in Thessaly fall about or before 7000 BC).

What it was that provided the initial impulse for the cultural development of the Old European Civilization is not clear. There is no archaeological proof that immigrants accompanied by domesticated plants and stock came from the Near East. Although it is possible that sheep, goats, and two-row barley entered southeastern Europe via the Eastern Mediterranean, this cannot be proven of cattle, pig, and einkorn wheat, which have wild ancestors indigenous to Europe. Likewise, obsidian sources are not confined to Anatolia and Transcaucasia, but exist in the Central Mediterranean and Aegean islands (Dixon, Cann, and Renfrew 1968). It would seem that the stimulating factor was active marine navigation and that the access to obsidian sources increased the rate of cultural exchange within the Aegean, Adriatic, and Central Mediterranean regions.

After the initial impact, Old Europe took its own course, producing a series of cultures which by their similarity, their mutual relationships, and their achievements, unify and distinguish a civilization distinct from that of the Near East as well as from that of its European neighbors to the north and west.

The Growth and Consolidation of Southeastern European Neolithic Culture and its Close Relations to Anatolia, the Levant, and Mesopotamia, *c.* 6500-5300 BC

Around 6700-6500 BC, hard-baked and burnished ware came into use both in Old Europe and in the Near East. Soon thereafter, painted pottery was introduced. In each area pots followed the local requirements of shape and styles of ornamental design. The chronological evidence does not speak for the priority of the Near East but suggests the spread of an idea rather than migrations or imports into southeastern Europe. Nowhere is there evidence for the transferal of a cultural complex *in toto* from the Near East to the Aegean area.

The end of the 7th millennium is marked by an explosive development in the arts and crafts of the Balkan Peninsula and central Anatolia. The bridge between the two continents was the Aegean islands. A continuous exchange of ideas and trade between the Balkans and central Anatolia is evidenced by a variety of stone and bone artifacts such as bone spatulae, belt hooks, small greenstone pendants, miniature axes, and chisels. Other closely related objects clearly belonging to ceremonial or ritual activities include stamp seals bearing ideograms of the same kind, human and animal figurines, theriomorphic vases, and vases with plastic reliefs representing masks of a divinity.

Clay figurines found in great quantities in Thessaly, Macedonia, Bulgaria, Romania, Yugoslavia, and southeastern Hungary from the period before and after 6000 BC, show close affinities with those known from the Hassuna and Samarra cultures in Mesopotamia. Examples are the Mesopotamian figurines with phallic heads, or with chevrons incised on the back, or with "coffee-bean" eyes – each style group characteristic of a category of mythical personae as conventionally represented in the figurine art of Old Europe. This spread of related mythical imagery over a distance of approximately 1300 to 1500 miles indicates the underlying uniformity, evidenced as well by a similarity of architectural tradition in Thessaly and Macedonia, Anatolia, and the eastern Mediterranean region. This is a tradition which includes interconnected rectangular houses, some with buttresses and stone foundations and loaf-shaped convex brick walls.

At the middle of the 6th millennium BC, nucleated villages of rectangular houses defended by ditches or walls may have contained up to 1000 inhabitants. Such for example is the Classical Sesklo settlement which extends over the slopes around the originally excavated tell (based on the estimate by Dr. D. Theocharis) of Passo di Corvo in the Tavoliere Plain, southeastern Italy; the tell covers an area of 50,000 square meters and includes more than a hundred compounds as known from Dr. S. Tine's excavation. Compared to these Old European habitational sites, the western and northern European dwelling sites, such as the Swiss lake sites, are mere hamlets.

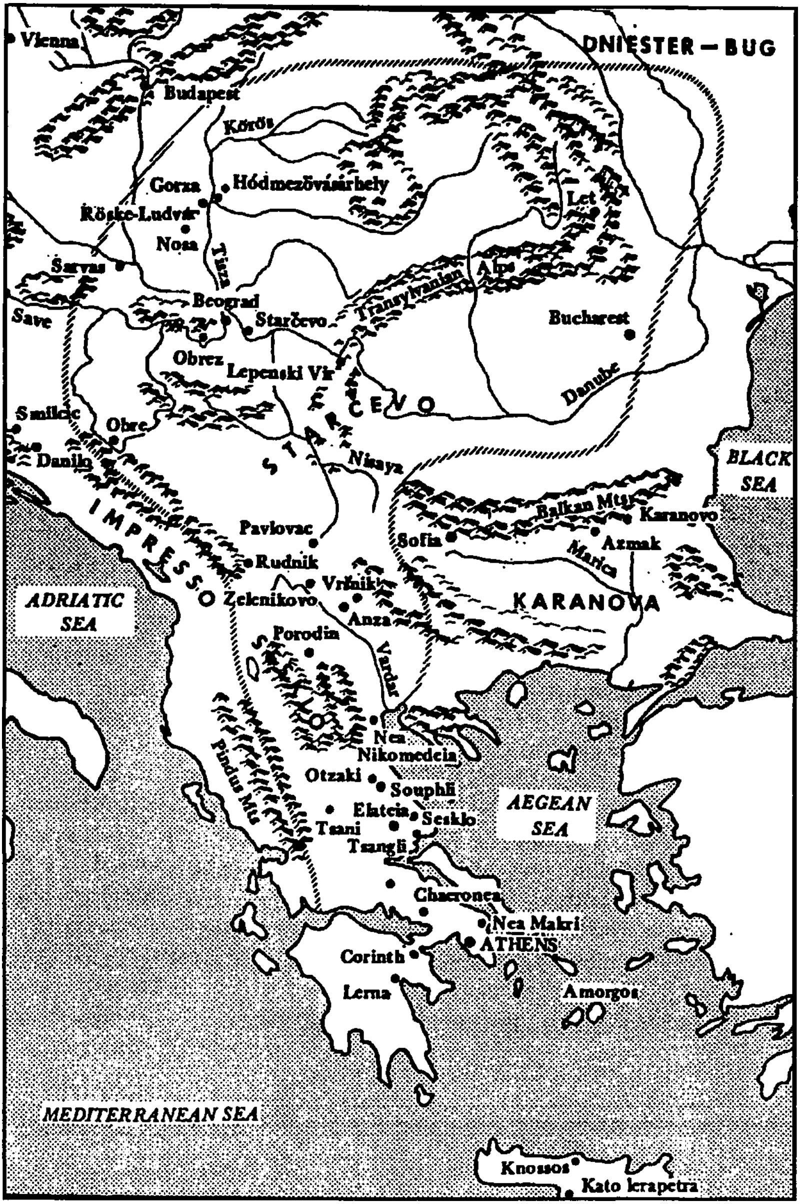
Cultural Complexes of the Neolithic Period, *c.* 6500-5300 BC

Neolithic developments display several traditions: 1) Aegean-central Balkan with three sub-groups, Sesklo, Starčevo and Karanovo; 2) Adriatic; 3) West-Pontic or Hamangia; and 4) Moldavian or Dniester-Bug (Map 2).

1) *The Aegean and central Balkan area.* The Neolithic culture in the Aegean and central Balkan area is known by a different name in each of the modern European countries over which it was distributed, the terminological distinctions reflecting modern political boundaries rather than significant cultural variation. In Greece, it is known as Proto-Sesklo, where the Sesklo settlement was the source of neolithic terminology succeeded by Sesklo proper; in Yugoslavia, as Starčevo, after the eponymous site east of Belgrade; in southeastern Hungary as Körös; in Romania as Criş – the Romanian name for the same River Körös. This complex occupied the drainage system of the Vardar and Morava in Macedonia and in southern and central Yugoslavia, the southeastern part of the Middle Danube Basin and extended peripherally as far as Moldavia in eastern Romania. Concurrently, a variant of the same Neolithic culture known as Karanovo emerged in the Marica Valley of Bulgaria.

2) *The Adriatic Area.* The earliest Neolithic culture of the circum-Adriatic region in western Yugoslavia, western Greece, and southeastern Italy is known as the 'Impresso' complex. Though inseparable from the circum-Mediterranean in the beginning, by the 6th millennium BC, it displays an individual tradition with the formation of the painted pottery Matera complex in southeastern Italy and Danilo along the Adriatic coast of Yugoslavia and Albania.

Commercial relations between southern and central Greece and the circum-Adriatic region seem to have accelerated the change and growth of the cultures in Sicily, Apulia, the Tavoliere region of Foggia, and other coastal areas. The



Map 2: Old Europe, 6500-5300 BC. Neolithic complexes and sites: Adriatic Impresso; Central Balkan Sesklo and Starčevo; and East Balkan Karanovo. (Hamangia is not indicated since its beginnings are not yet known. Its later distribution was along the Black Sea in Romania).

trade in Lipari obsidian and ritual vessels (so-called rhytons of zoomorphic shape with circular handles) has been shown by the distribution of the finds.

3) *The West Pontic, or Hamangia.* The development of the Hamangia culture is still obscure but it is interesting to note that cardial impressed pottery of an entirely different tradition from that of the Karanovo and Starčevo complexes to the west was manufactured during the early stage of its development. The physical type of the population includes Mediterranean elements. The developed Hamangia culture is best known for its individual style of figurine art. This complex was superseded by the Chalcolithic East Balkan Civilization (also known as Varna).

4) *The Moldavian-West Ukrainian Area.* The black-soil region northwest of the Black Sea crossed by the fertile valleys of the Prut, Siret, Dniester, and southern Bug offered a favorable environment for the inception and development of a Neolithic subsistence pattern. The Dniester-Bug Neolithic culture of permanent village settlements based on a farming economy had an indigenous development. Subsequently, it was influenced from the south and west during the 6th millennium BC by the central Balkan (Starčevo) complex and in the 5th millennium BC by the eastern Balkan (Boian) and central European (Linear Pottery) complexes. The uninterrupted cultural continuum is ideally defined by stratigraphic and typological studies and reinforced by radiocarbon dates. These reveal a Neolithic sequence of three aceramic and five ceramic phases.

Cultural Complexes of the Chalcolithic Period, *c.* 5300-3500 BC

By 5000 BC, Old European culture crystalized into many regional variants displaying well-developed traditions in ceramic art, architecture, and cult organization and justifying the term "civilization." The Old Europeans formed population aggregates often amounting to small townships – a situation with the unavoidable implications of religious and governmental institutions. They evolved a rudimentary script and craft specialization. They also discovered the use of metal and worked gold and copper for the manufacture of ornaments and tools.

Several traditions of Old European civilization continued in the following regions: 1) The Aegean; 2) The Central Balkans 3) The Adriatic; 4) The Middle Danube; 5) The Tisza; 6) The Eastern Balkans; and 7) The Moldavian-West Ukrainian.

The first region embraces what is presently Greece and the Aegean islands. The second region includes Yugoslavia (except the Adriatic seaboard): the Vinča and Butmir civilizations. The third area consists of the painted pottery complex on either side of the Adriatic (Serra d'Alto in southern Italy and the Hvar in Dalmatia). The fourth variant includes the Lengyel culture of the Middle Danube Basin; this displays connections with the Adriatic complex in both the material stylistics and in the physical-skeletal type of population, and it succeeded the Neolithic central European Linear Pottery culture. The fifth region comprises the Tisza Basin in which the Tisza and Bükk complexes of Alföld tradition were succeeded by Tiszapolgár, a metal-producing, Lengyel-related culture. The sixth region includes the Karanovo culture of Bulgaria (Karanovo III to VI phases) and the Vădastra-Boian-Gumelniţa complexes of Romania and the Macedonian branch referred to as the Dikili Tash complex. In the seventh region, Moldavia and the West Ukraine, local Neolithic culture was followed by the Cucuteni (Tripolye in Russian) civilization. The Petreşti variant is an intermediate group between Lengyel and Cucuteni (Map 3).

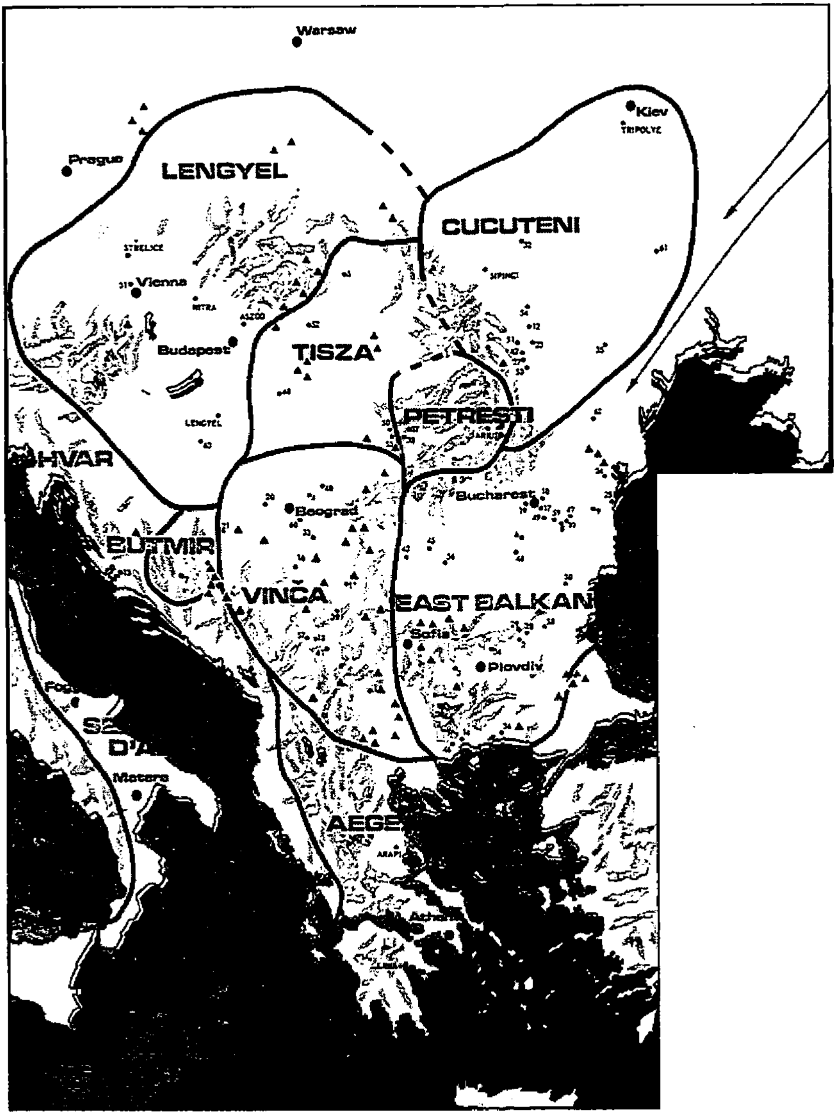
A sharp increase in tempo towards a higher level of complexity and sophistication is seen in each Old European civilization. Copper came into use around 5500 BC (the late Starčevo layer of the Obre I site yielded copper pieces dated to *c.* 5400 BC), and gold before or around 4000 BC. Craft specialization is evident from the outstanding artistic and technological achievements realized in ceramic production (exquisite polychrome, black-polished, channelled, graphite-painted pottery).

The growth of population is shown by the density of sites; in the East Balkan and Cucuteni areas, for example, several thousand settlements and cemeteries are known. Large villages grew into townships most notably in the central Balkan Vinča civilization.

Shrines, temples, and cult equipment evidence an organized religious structure and highly developed ceremonialism. At Căscioarele, an island settlement in a lake near the Danube southeast of Bucharest, Romanian archaeologists unearthed a temple dated to about 5000 BC (a calibrated radiocarbon date) characterized by Late Boian ceramic ware of the East Balkan civilization. The temple walls were beautifully painted with spiral designs in red and green on a background of cream. Two elegant pillars painted with intricate designs stood within the shrine. (The first report of the temple was published by V. Dumitrescu 1970). Above this shrine was another of somewhat later age (Gumelniţa complex) in which a clay model of a temple structure was discovered (H. Dumitrescu 1968). The model represents a truly monumental building complex of four temples standing on a high stereobate (Fig. 1).

Many other temple models have been found in the Balkan Peninsula. Some from the East Balkan and Cucuteni civilizations are two-storied, with sculpted heads or masks of deities or animals modeled on the gables which appear to represent temples dedicated to certain gods or goddesses.

The evidence of costume detail on clay figurines suggests a style rich in ornaments for both female and male attires. In their figurine art and pictorial painting and reliefs on ritual vases and house walls, the Old Europeans recreated their mythical world and depicted their worship of gods. Myths and seasonal drama must have been enacted through the medium of the figurine. The quantities of figurines, ritual pottery, shrine equipment, and other variety of representations on objects related to religious ceremonialism, are the most eloquent vestiges of Old European civilization indicating a complex spiritual awareness.



Map 3: Old Europe, 5300-3500 BC: Major cultural variants (civilizations) of Chalcolithic (stone-copper) stage (except in the Aegean region where copper artifacts are not known so far). Note: Tisza is followed by Herpaly, Tiszapolgár, and Bodrogkeresztúr complexes showing affinity with the Lengyel. The arrows indicate the direction of Kurgan infiltration after 4000 BC.

The emergence of a script is not surprising in the context of temples and other evidence enumerated above. The inscribed Tartaria plaques discovered in 1961 (Vlassa 1963) belong to the early Vinča sacrificial pit and should be dated to the end of the 6th millennium BC. Likewise, the most recent dates for the

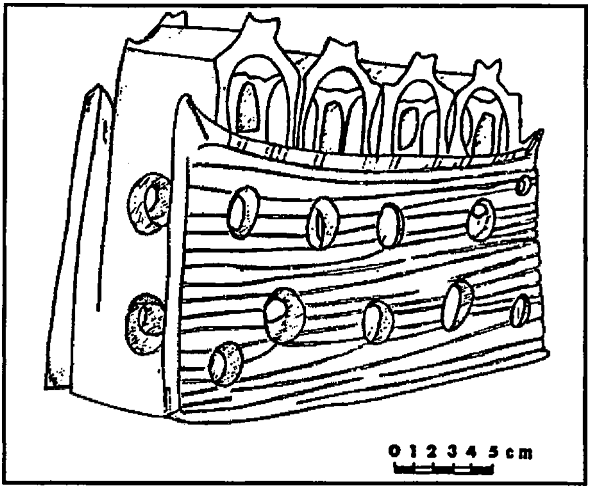


Fig. 1: Clay model of an edifice: four temples on a high stereobate. Căscioarele, an island settlement near the Danube in southern Romania. East Balkan civilization. Second half of the 5th millennium BC.

Map 3 Key: **Neolithic Archaeological Sites**

Letters in italics indicate the cultural group to which each site belongs.

1. Anza *V*
2. Azmak *EB*
3. Banjata *EB*
4. Banjica *V*
5. Bodrogkersztúr *T*
6. Boian *EB*
7. Butmir *B*
8. Căscioarele *EB*
9. Cernavoda *EB*
10. Cernica *EB*
11. Crokalačka Bara *V*
12. Cucuteni *C*
13. Danilo *H*
14. Dikilitash *EB*
15. Dimini *A*
16. Divostin *V*
17. Dudeşti *EB*
18. Fafos *V*
19. Giuleşti *EB*
20. Gomolava *V*
21. Gornja Tuzla *V*
22. Gumelniţa *EB*
23. Hăbăşeşti *C*
24. Hamangia *EB*
25. Hirşova *EB*
26. Hvar *H*
27. Izvoare *C*
28. Karanovo *EB*
29. Kazanlik *EB*
30. Kodjadermen *EB*
31. Lang Enzerdorf *L*
32. Luka Urublevetskaja *C*
33. Mfdvednjak *V*
34. Muldava *EB*
35. Novie Ruseshty *C*
36. Paradimi *EB*
37. Petreşti *P*
38. Pianul de Jos *P*
39. Pločnik *V*
40. Potporanj *V*
41. Predionica *V*
42. Prumusica *C*
43. Rastu *EB*
44. Ruse *EB*
45. Salcuţa *EB*
46. Sitagroi *EB*
47. Sultana *EB*
48. Szegvar-Tuzkoves *T*
49. Tangiru *EB*
50. Tartaria *T*
51. Tirpeşti *C*
52. Tiszapolgár *T*
53. Traian *C*
54. Truşeşti *C*
55. Turdas *T*
56. Vadaştra *EB*
57. Valač *V*
58. Veselinovo *EB*
59. Vidra *EB*
60. Vinča *V*
61. Vladimirovka *C*
62. Vulkaneshty *EB*
63. Zengovarkony *L*

early Vinča complex (from the site of Anza in Macedonia) are 6200 ± 200 (LJ-2411) and 6250 ± 100 (LJ-2329) BP. Converted to approximate true age, these give a date around 5300-5200 BC.

Hundreds of miniature vessels of the early Vinča period in the Vinča site itself – not to mention spindle whorls and ex-voto dishes or cups from the central and eastern Balkans from Early and Classical Vinča, from Boian, Gumelniţa and Dikili Tash complexes – exhibit linear signs which are quite distinct from symbols or ideograms. These items testify to the existence of a script (Figs. 2, 3). The Old European script is some 2000 years older than the Sumerian. It was presumably associated with religious functions, serving to record, to dedicate, to commemorate.

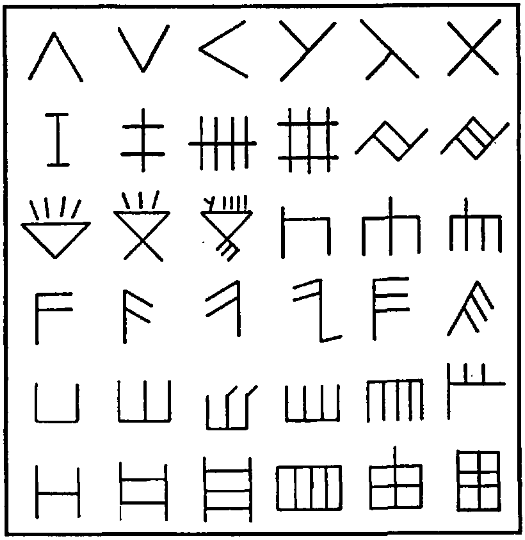


Fig. 2: Some of the linear signs of the Old European script that appear on figurines, cult vases, and other ritual objects of the Vinča civilization.

The Infiltration of the Kurgan Proto-Indo-European Peoples

The first encounter of the Cucuteni civilization with the pastoral-patriarchal Kurgan people of the Pontic steppes dates back to the period before 4000 BC. This can be deduced from the Cucutenian (Tripolyan) influence on the Kurgan culture.

The infiltration of the Kurgan people can be traced by their graves in Romania (Dobruja, Moldavia, and Transylvania) and in eastern Hungary during the period of 4000-3500 BC. This is the Kurgan II period and the end of the Classical Cucuteni civilization (Cucuteni *AB*-Tripolye *B* phase).

The Kurgan people are evidenced by single graves in deep shafts. Frequently, their graves were in wooden chests or stone cists marked by low earthen or stone barrows (*kurgans*). The dead lay on the back with contracted legs. Their mortuary equipment included flint points and arrowheads, *i.e.* spears, bows, mace-heads, flint knives, and celts. Figurines depicting heads of horses carved out of semi-precious stones and beads and pendants of boar's tusks or deer teeth were also frequent in the graves. Bones of cattle, horses, pigs or boars, and hearths were located at the entrance to the graves, evidence of funeral feasts and other religious rites. Human sacrifices were performed during the funeral ceremonies and, in some cases, ritual graves of cattle and horses were discovered near the graves of these warriors. The Old Europeans' burial rites contrast with those of the Kurgan people, who betray a concern for the deification of the dead and the construction of monumental works of architecture visible in mortuary houses, grave markings, tumuli, stone rings or stone stelae, and in the large quantity of weapons found in the graves.

The disintegration of Old Europe ensued after 3500 BC in most of east central Europe and the Balkan peninsula, except for the mountainous and coastal regions, and in Crete, the Aegean and Adriatic islands, and Italy. The Kurgan superstratum is traceable by the predominance of the warrior element and by the different traditions in religion, the arts, and crafts. A series of acropolises with heavy stone fortifications emerged as far south as the Marica Plain in Bulgaria and even extended into western and central Turkey (Ezero, Mikhalich, Kazanlyk, Okol Glava in Bulgaria, Troy I, Thermi on Lesbos, Poliochni on Lemnos, Ahlatlibel near Ankara). The townships of Old Europe, with their temples, exquisite altars, ritual vases, tripods, and sculptures (figurines), vanished.

The process of cultural amalgamation followed the varied and intricate Old European style. The newly formed culture displayed a trend towards uniformity of material culture. In archaeological literature, this Balkano-Danubian entity is represented by various archaeological complexes: Ezero in Bulgaria and Macedonia, Cernavoda in Dobruja, Coţofeni in Transylvania, Gorodsk-Usatovo in the western Ukraine, Proto-Baden or Boleraz in Hungary, Croatia, lower Austria, southern Germany, Czechoslovakia, and southern Poland. It is then succeeded by the Baden (Gimbutas 1970:180). In the north European plain between Denmark and Poland, a similar process of kurganization (Indo-Europeanization) is evidenced by the Globular Amphora complex, a blend of the Kurgan elements (typical Kurgan burial rites, camp sites, small villages of rectangular houses with an open hearth inside, the presence of the horse, etc.) with the elements of the Funnel Beaker culture as a substratum.

The period of 2500 to 2200 BC was the peak and final stage of the Kurgan expansion. Immense destruction of the towns in the Aegean area, Turkey and in the eastern Mediterranean marked the arrival of the Kurgan tribes. By the time of this historical period, the Mycenaean Greeks are known in Greece and the Hittites in Anatolia. Fabulous treasures in royal tombs indicate the prowess of the Indo-European chieftains in war, in plunder, and in ruling over the peoples of different cultural backgrounds.

The Old European substratum remained strongest where the Kurgan infiltration was late: in the Aegean region and the islands where in Crete and Thera the Old European civilization persisted up to the middle of the 2nd millennium BC.

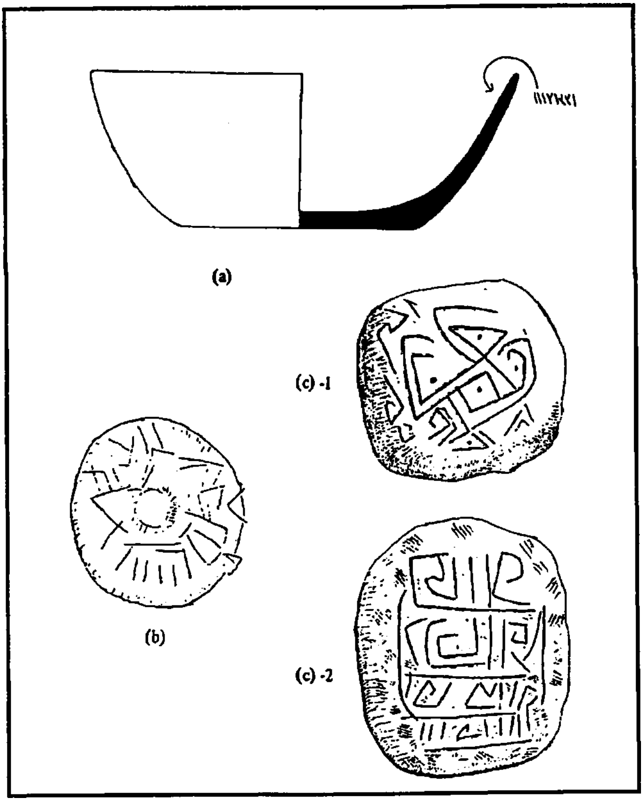


Fig. 3: Examples of Old European script: a) early Vinča bowl with an inscription on the inside wall. Vinča site (Belgrade National Museum); b) inscribed spindle whorl from the early Vinča site of Fafos at Kosovska Mitrovica in southern Yugoslavia. Kosovska Mitrovica Museum, (excavated by J. Glišic); c) a dish with inscriptions on the outside (top, around the figure) and on the inside, in four lines (bottom). (*After* B. Nikolov 1970. From Gradešnica near Vratsa in west Bulgaria.)

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The Beginning of the Bronze Age in Europe and the Indo-Europeans:
3500-2500 B.C.*

Bronze age weapons are found in royal tombs and hill fortresses now identified as Indo-European. The diffusion of bronze metallurgy over the European continent follows the routes of dispersal taken by the Indo-Europeans, whose mobility would account for the rapidity with which the use of bronze supplanted the earlier copper technology.

Introduction

The first appearance of bronze metallurgy in Europe must take into consideration the chronology and area of the earliest copper metallurgy in Europe and Asia, the results of recent metallographical studies, the evidence for ethnic shifts, and the general agreement on the usage of terms such as 'Chalcolithic' ('Eneolithic'), 'Copper Age', and 'Bronze Age'.

First, let us recall that new dating techniques (calibrated radiocarbon dates, in particular) have provided a tool for understanding the chronological dimensions of the earliest European civilization extant in the Balkan Peninsula, in east Central Europe, and in southern Italy. This civilization lasted for about 3,000 years, *c.* 6500-3500 BC. (See Gimbutas 1970, [p. 75 this volume.]) During these thousands of years of gradual development toward a civilized life, metallurgy had been locally, and probably independently, discovered in Europe. This was a copper metallurgy, centered around the Carpathian Mountains, the Dinaric and Transylvanian Alps, and the Balkan Mountains.

Second, the transition from the Copper Age (the period when copper was used, but no experiments in alloying can be traced) to the Bronze Age (the period when artifacts of pure copper were superseded by copper-arsenic or copper-tin alloys) in Danubian, Pontic, and Mediterranean Europe occurred in the period between 3500 and 2500 BC. These dates are considerably earlier than the traditional dates of *c.* 2000 BC which were employed by archaeologists prior to the introduction of new dating techniques and the large scale excavations of stratified tells after World War II.

This transition does not represent a continuity of the metallurgical traditions of the earliest European civilization. A new innovative technique

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appeared – a deliberate alloy of copper and arsenic – suggesting influences from Transcaucasia where the beginnings of copper and arsenic alloys can be traced back to the 5th millennium BC. Furthermore, it is significant to point out that this new technique coincides with the emergence of metallic weapons.

Third, the fact must not be overlooked that the weapons of hard metal, primarily daggers, are found in royal tombs and in hillforts bearing diagnostic elements of the Indo-European or 'Kurgan' burial rites and acropolises.

And lastly, the terminology:

There are no set rules for the use of the terms "Chalcolithic" *(chalcos* 'copper' and *lithos* 'stone' in Greek) or "Eneolithic" *(eneos* 'copper' in Latin), "Copper Age," and "Bronze Age."

The current terminology is as follows: "Neolithic" is used for the period from *c.* 7000 to 3500 BC in southeastern Europe, regardless of the fact that copper and gold artifacts had appeared from 5500 BC onwards. "Eneolithic" is the label given to the period from 3500 to 2000 BC in east Central Europe; however, this period is called "Early Bronze Age" in the closely related culture in Bulgaria and the Aegean. "Chalcolithic" is the term used for the entire 3rd millennium BC in Italy. This confusion in terminology continues because no collective decisions have been made on the criteria for the definition of these periods.

Metallurgical examination of metal tools from the Balkan Peninsula, Central and Mediterranean Europe, Russia, and the Caucasus has been carried out recently and the results are published (Junghans, Sangmeister, and Schröder 1968; Selimkhanov 1960, 1962, 1965; Chernykh 1965, 1966). For the first time it has become possible to speak about the composition of metal artifacts used in certain geographical regions and periods, and therefore the adjustment of the old terminology to the new knowledge about copper and bronze is indispensable.

The recognition of arsenic in copper as an alloy, and not as an impurity, may be the key to settling the debate over where to place the beginning of the Bronze Age. In fact, any deliberate alloy with copper should be understood as 'bronze', not necessarily a copper and tin alloy. It has been established that arsenic copper, which precedes the copper-tin alloy, was intentionally produced. Studies of arsenic copper have proved that copper plus arsenic can produce a metal with the strength and hardness equivalent to that of tin bronze (Charles 1967).

The purpose of this article is to show that the rapid spread of bronze metallurgy over the European continent was due to the mobility of the Indo-Europeans. The appearance of bronze weapons – daggers and halberds – together with thin and sharp axes of bronze and maceheads and battle-axes of semi-precious stone and flint arrowheads, coincides with the routes of dispersal of the Kurgan people. The name 'Kurgan' is a blanket name for a cultural complex that caused a dramatic change in Europe and is assumed by this author to represent the Indo-European culture of the 5th, 4th, and 3rd millennia BC.

The Old European Carpatho-Danubian Center of Copper and Gold Metallurgy. *c.* 5500-3500 BC

The first metallurgy of Europe appears in the 6th millennium BC and was developed by people living south of the Carpathian Mountains and in the region of the Dinaric and Transylvanian Alps. The area is designated as the "Carpatho-Danubian Center" (Map 1). There is no evidence of the alloying of copper with tin or arsenic at this time.

Artifacts of obsidian, spondylus shells, and flint found throughout east central Europe and the Balkan Peninsula testify to extensive trade of these artifacts for copper ore.

The beginning of metallurgy is still obscure, but it has long been posited as related to the appearance of kilns and furnace skills. Religion, too, may have been a catalytic factor, since the earliest copper artifacts are identified as ritual equipment. Gold figurines and the use of copper bracelets and gold pendants may also have been connected with ritual performances or offerings. Bracelets appear on Early Vinča and Tisza figurines of gods or priests of *c.* 5000 BC. The clay figurine of a seated masked god from Tűzköves in southeastern Hungary, for example, is depicted with bracelets and a large curved "sickle" over his shoulder (Fig. 1). A similar sickle in copper has been discovered in Hungary (Fig. 2).

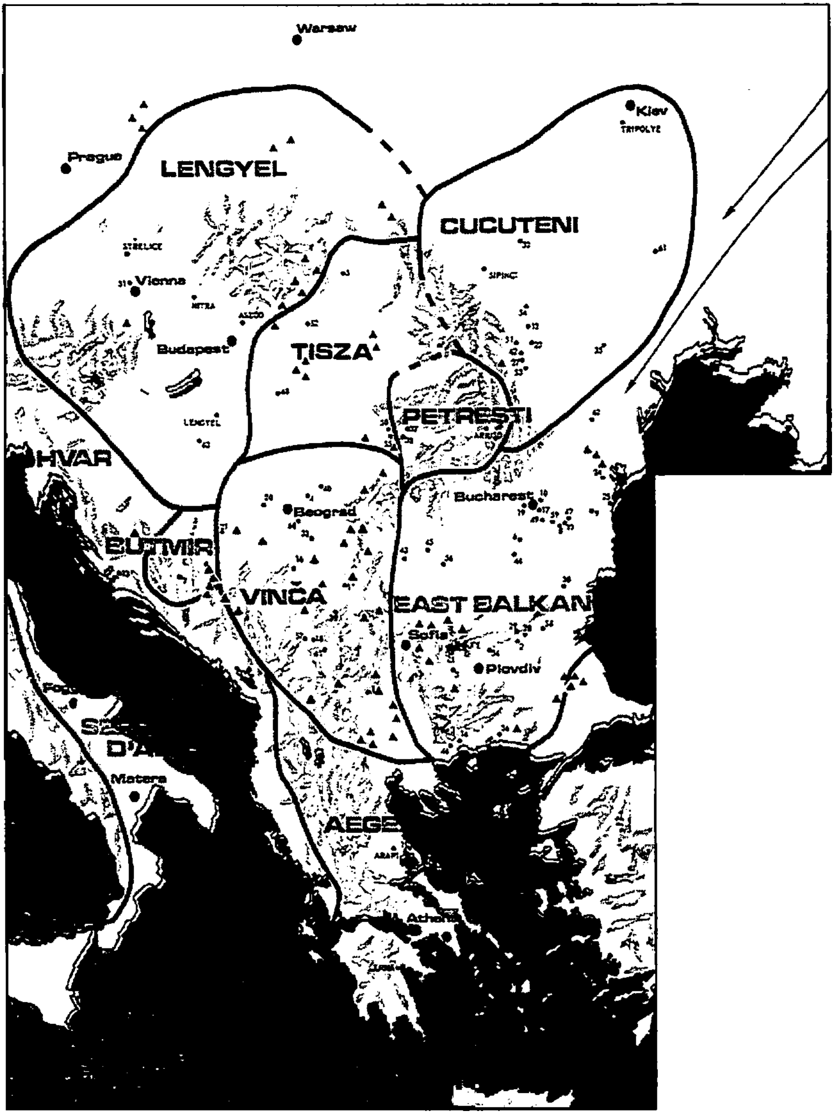
Copper beads, pendants, and trinkets are documented in late Starčevo levels (for instance in Obre 1, northwest of Sarajevo in Yugoslavia, dated by C14 analysis; calendar year: *c.* 5400 BC 1967/68 excavation by A. Benac and this author). So far this is the earliest date for copper in the Balkan Peninsula.

Copper mines discovered near Belgrade have been dated by ceramic finds to the Early Vinča period (Jovanović 1971). The corrected radiocarbon dates for Early Vinča sites are from 5300 to 4800 BC. Copper artifacts from the eastern part of the Balkans (Early Boian, Hamangia, and Early Cucuteni complexes) can also be dated to the 5th millennium BC.

Thus, during the course of the 5th and early 4th millennia, copper came into general use for the manufacture of awls, needles, double-spiral pins, fishhooks, wedge-shaped tools, flat axes, and shaft-hole axes (Figs. 3-5). Copper and gold sheet also emerged in manufacture of figurines and anthropomorphic ring-pendants (*cf.* Karbuna hoard: Sergeev 1962; Hotnica treasure found in the shrine: Angelov 1959; other pendants: H. Dumitrescu 1961).

The perforated stone axe occurred during the second half of the 6th millennium and was followed by the copper shaft-hole axes in the late 5th millennium. The first metal examples show close relationships to the stone axe forms (Figs. 4; 5/6, 7). The simple shaft-hole axe was succeeded by a more sophisticated axe-adze during the final stage of the Old European civilization (Fig. 6). Axe-adzes are dated to the first half of the 4th millennium BC.

The production of specialized tools such as axes and axe-adzes was a "serial" development, and the existence of craftsmen cannot be doubted. The metallographic analyses have shown that these axes were cast in an open mold.



Map 1: Old Europe at 5500-3500 BC and the Carpatho-Danubian center of copper and gold metallurgy. ▲ = Copper sources *[For Key see Map 3, p. 127 above.]*

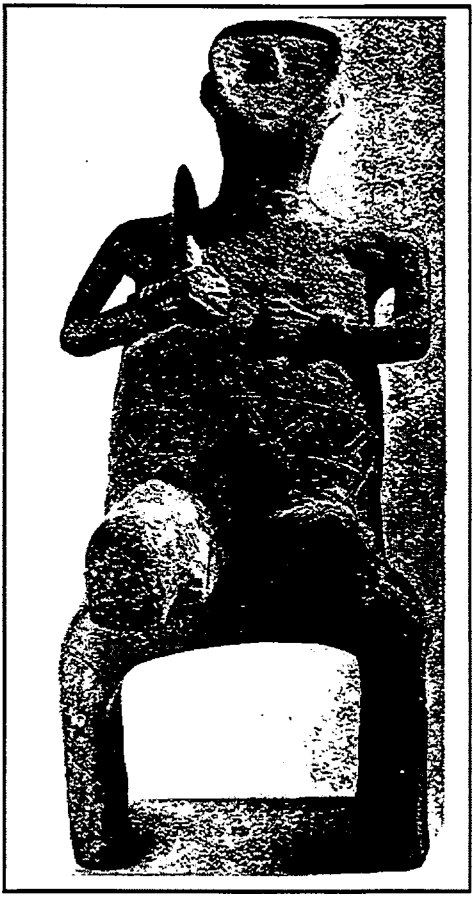


Fig. 1: Clay figurine of a masked, enthroned god or priest wearing necklaces and holding a sickle-shaped tool or scepter. Szegvár-Tűzköves, a Tisza settlement at Szentes, eastern Hungary. H: 25.6 cm. c. 5000 BC.

The shaft-hole axes were not produced by drilling, but by casting a round core which was then set into the mold before the molten copper was poured in. The tool was then forged to the desired shape (Charles 1970). The axe-adzes of Old Europe were wood-working tools, not battle-axes or symbols of divine power as they were known to be in proto- and historic Indo-European cultures.

Copper metallurgy appeared as early as the 7th millennium in Anatolia at Cayönu in southeastern Turkey (this site yielded a radiocarbon date of 6900 BC) and at Çatal Hüyük in central Anatolia *c.* 6000 BC. Because of the paucity of copper items in the contact zone – the Cyclades and coastal Greece – it is unlikely that the Old European copper metallurgy was derived from Anatolia. At the present stage of research the hypothesis of an autonomous development is feasible.

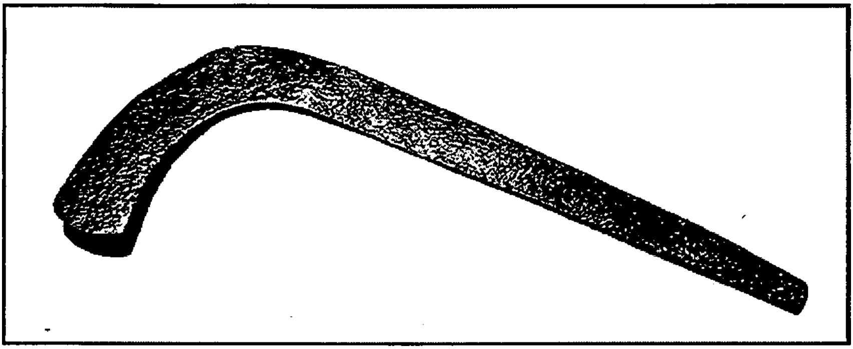


Fig. 2: A copper sickle or scepter, an isolated find from Zaerszentmihály, Balaton area, western Hungary, 54 cm. long. *c.* 5000 BC.

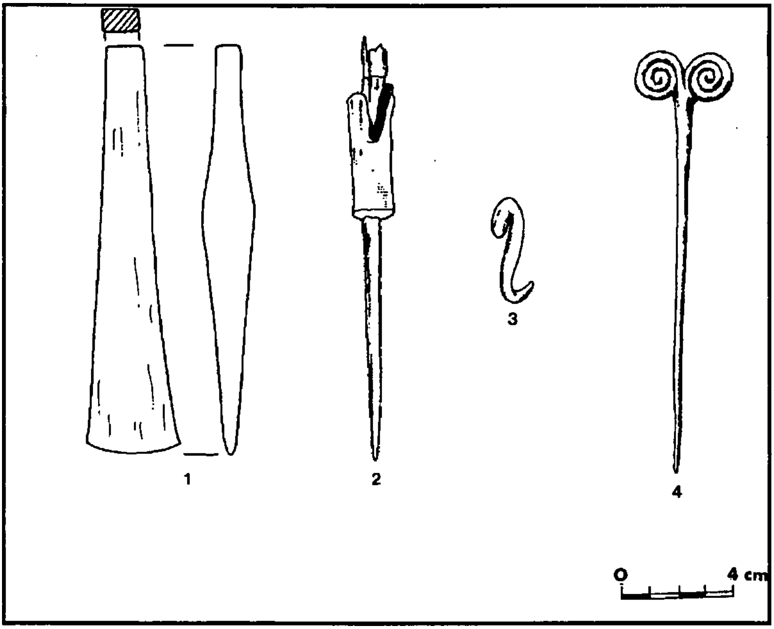


Fig. 3: Copper axe, awl, fish hook, and pin with a double-spiral head discovered in a house of the Ruse settlement in north Bulgaria. East Balkan civilization, Gumelniţa complex. Relative date: end of the 5th millennium BC.

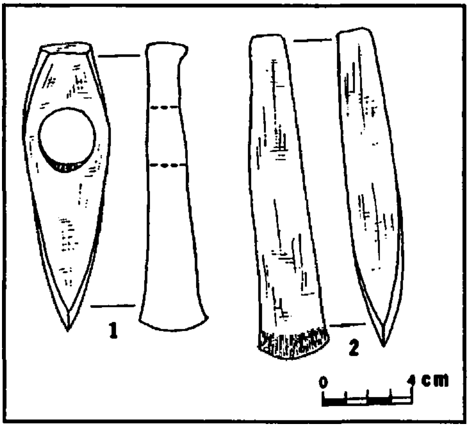


Fig. 4: Copper axes from the hoard of Karbuna, Soviet Moldavia, River Prut Valley. Early Cucuteni (Tripolye) civilization. End of the 5th millennium BC.

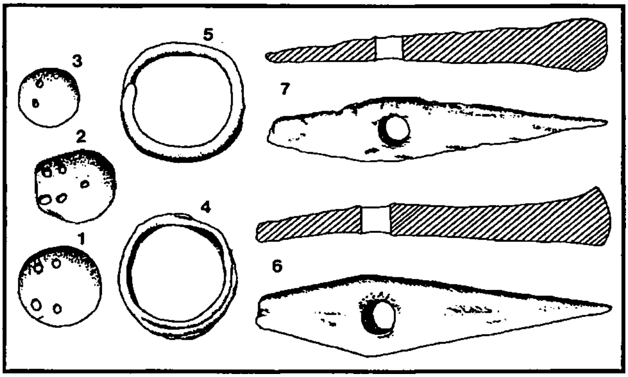


Fig. 5: Copper axes, bracelets, and gold pendants from the cemetery of Tibava, western Slovakia, Tiszapolgár complex. *c.* 4000 BC.

The Transcaucasian Center of Bronze Metallurgy

The area comprised by Transcaucasia (Map 2) contains more than 300 sources of copper ore and was the center of bronze metallurgy. Here have been found the earliest man-made alloys of copper and arsenic. Small rhomboidal daggers and awls with rectangular cross-section came to light in the settlement of Kül-Tepe I near Nakhichevan, south of Lake Sevan in Azerbaijan; this Kül-Tepe I stratum is equated with the Halaf culture of Mesopotamia (Kushnareva-Chubinishvili 1970:39, 50). A radiocarbon date has been obtained for this layer: 5770 ± 90 BP (before present), 3820 ± 90 b.c. (LE-477). The calibrated

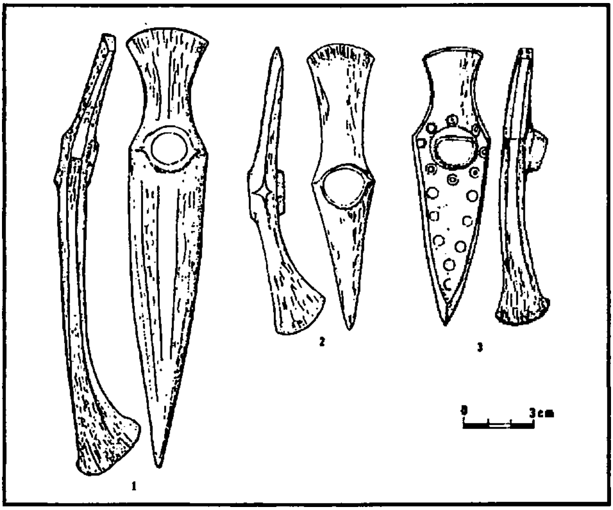


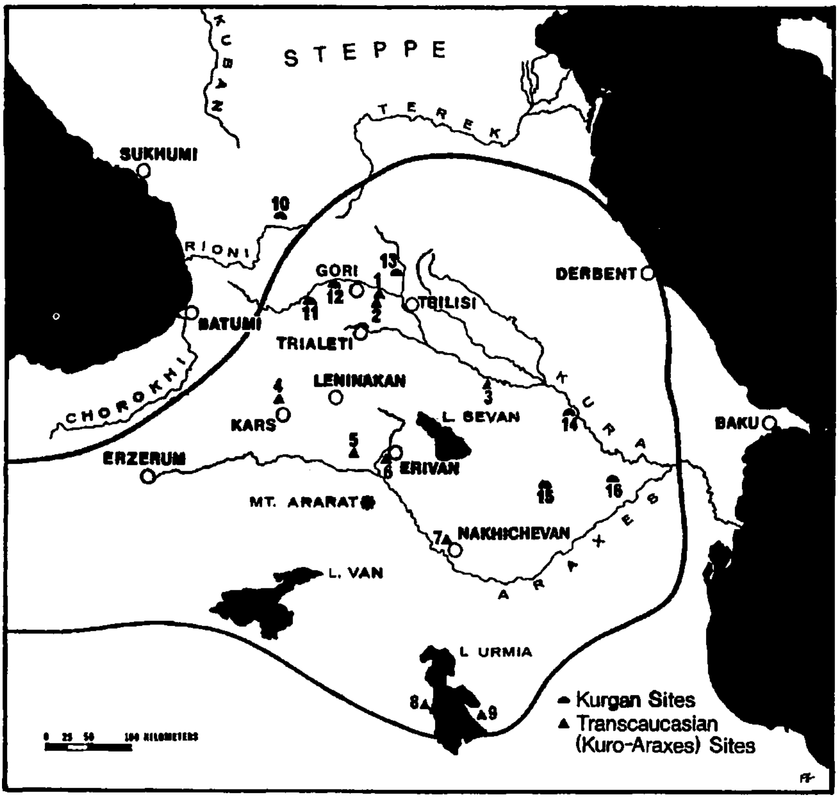
Fig. 6: Copper axe-adzes from the Bodrogkeresztúr group of eastern Central Europe. 1) Glímbocata near Sibiu, W. Romania; 2) Jászladany, northeastern Hungary; 3) Handlová, Slovakia.

date indicates the middle of the 5th millennium BC. Several contemporaneous settlements in Armenia (Tekhut) and in Azerbaijan (Geoi-Tepe at Lake Urmia) have also yielded limited numbers of awls, chisels, knives, daggers, and beads. Analysis of the metal artifacts from Kül-Tepe I and Tekhut were found to have an arsenic content of up to 5.4 percent (*ibid.*:55). Copper slag and stone hammers for working copper were found in association with metal artifacts in these settlements (*ibid.*: figs. 5, 19).

Metallurgical activities seem to have intensified markedly during the following period, represented by Kül-Tepe II and other sites. The chronology is indicated by the following radiocarbon dates, which when calibrated, suggest a period from 3700 to 3300 BC.

Kül-Tepe II:	4880 ± 90 BP	2930 ± 90 b.c.	(LE-63)
Amiramis-Gora:	4835 ± 180 BP	2885 ± 180 b.c.	(TB-4)
Kvatskhelebi:	4760 ± 90 BP	2810 ± 90 b.c.	(LE-157)
Geoi-Tepe:	4524 ± 146 BP	2574 ± 146 b.c.	(P-199)

This period is called the 'Kuro-Araxes culture' in Soviet literature. Approximately 250 bronze weapons, tools, and ornaments have been discovered in the deposits of this period or typologically assigned to it. These include sleeve shaft-hole axes, tanged daggers, tanged spearheads, sickles, long pins, spiral bracelets, earrings, and diadems (Fig. 7). The alloy used for axes and daggers had about 2 to 3 percent arsenic content, whereas the percentage



Map 2: The Caucasian (Kuro-Araxes) culture of the 5th and 4th millennia BC and the Earliest Kurgan sites south of the Caucasian Mts.

Key: **More important sites of the Caucasian culture (triangles): 1) Khizanaant-Gora; 2) Kvatskhelebi; 3) Baba-Dervish; 4) Amiramis Gora; 5) Tekhut; 6) Shengavit; 7) Kül-Tepe; 8) Geoi-Tepe; 9) Janik Tepe. Kurgan cemeteries and settlements: 10) Sachkhere; 11) Tkiavi; 12) Beshtasheni; 13) Samgori; 14) Mingechaur; 15) Stepanakert; 16) Uch-Tepe.**

of arsenic was much higher (up to 22.7 percent) in ornaments and artifacts which did not require additional forging after casting. The actual remains of metallurgical workshops and smelting ovens have been discovered at the sites of Amiramis-Gora (Fig. 8) and Baba-Dervish (Fig. 9). These contained bivalve or open molds of clay or stone, copper slag, and nozzles or ladles used for smelting copper (Fig. 10). The above-mentioned radiocarbon date from Amiramis-Gora was obtained from charcoal found in the workshop of a smith.

The Transcaucasian culture is typified by large tells of settlement debris. These contain remains of circular or large rectangular houses of stone or clay-daub, some having painted interior walls and fancy clay hearths. Burials found

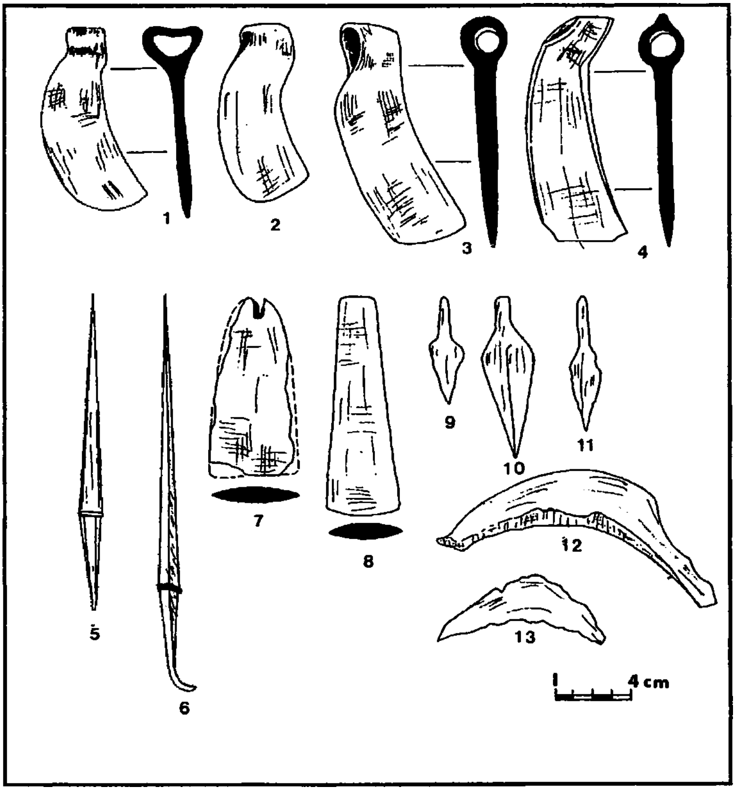


Fig. 7: Shaft-hole axes, flat axes, tanged dagger blades, awls (rectangular in cross-section), and sickles from Transcaucasia (Kvatskhelebi, Kül-Tepe, Amiramis-Gora, Geoi-Tepe, Elar, Tbilisi). Kuro-Araxes culture, Kül-Tepe II period. Second half of the 4th millennium BC. (*After* Kushnareva and Chubinishvili 1970.)

in the settlement area were either in oval pits dug into the cultural layer, or under the house floors. The dead were buried in a contracted position and rarely were equipped with more than an occasional pot, bead necklace, bone tool, or obsidian blade. These cultural traits speak for a settled agricultural population with an affinity to Mesopotamia and Iran in mode of life and contrast with the semi-nomadic habits of the horse-breeding Kurgan peoples of the North Caucasian and lower Volga steppes. The Transcaucasian culture is regarded to be ancestral to the historically known Hurrians of the 2nd millennium BC and the Urartu Kingdom of the Early Iron Age. Linguistically, these people have been assigned to the proto-Caucasian (Kartvelian) family (Dzharparidze 1962).

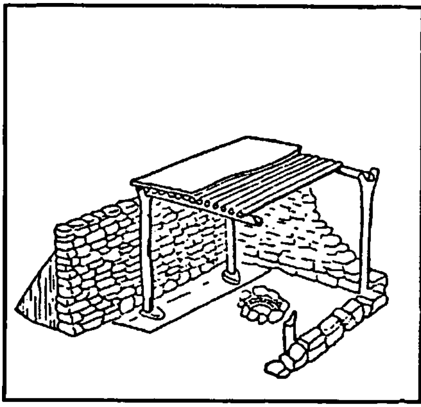


Fig. 8: Smith's workshop from the second half of the 4th millennium BC. Amiramis-Gora, Transcaucasia, northwest of Leninakan. Kuro-Araxes culture. (*After* Kushnareva Chubinishvili 1970.)

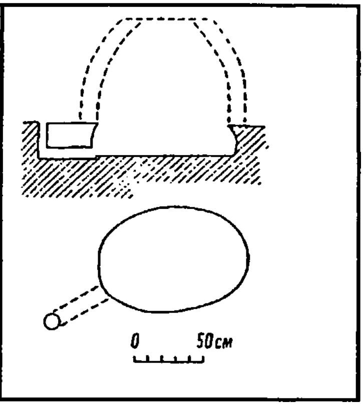


Fig. 9: Smelting oven from the settlement of Baba-Dervish, south of Kazakh, in the River Kura Valley. Second half of the 4th millennium BC. (*After* Kushnareva and Chubinishvili 1970.)

The Kurgan (Indo-European) Infiltration South of the Caucasus and the Transmission of Transcaucasian Metallurgy to the West

There was no copper ore in the steppe zone north of the Black Sea. However, the earliest metal finds from Kurgan graves and hillforts are similar both in type and in arsenic content to the bronze artifacts known in Transcaucasia (Chernykh 1966:58ff, 96ff). This leads to the hypothesis that the horse-riding Kurgan people of the steppe were aware of the metal technology which existed in the 5th and 4th millennia BC south of the Caucasus Mountains. Probably by no later than 3500 BC, they had learned metallurgical techniques from the Transcaucasians, and soon afterward, they were exploiting the ores of the Caucasus.

Characteristic tool forms of the Caucasian metallurgical center were the sleeve shaft-hole axe, the tanged dagger, or halberd blade, and the tetrahedral awl with a bulge in the upper part (Fig. 7). Similar types or their derivatives were soon produced north of the Caucasus Mountains, and were disseminated widely over south Russia, the Ukraine, the north Aegean, the entire Danube basin, and subsequently, throughout the northern European plain.

Kurgan Sites South of the Caucasus Mountains

The breakthrough for the beginning of metallurgy among the Kurgan people must have been their arrival in the river Kura Valley of Azerbaijan and in

Georgia. Kurgan graves appeared as a new phenomenon in Transcaucasia. Their presence south of the Caucasus range is witnessed by a series of barrows (kurgans typical of the North Caucasian and Volga steppe) in the Mil'ska steppe near Stepanakert and at Astarinsk on the mountain slopes of Karabakh (Kushnareva and Chubinishvili 1970:82-85). One of the routes of their dispersal from the north seems to have been along the eastern Caucasus coastline of the Caspian Sea.

The most impressive of the barrows is No. 3 from Uch-Tepe in the Mil'ska steppe (Fig. 12). It is an earthen mound 17 meters high with a diameter of 130 meters, and covers an inner stone cairn 2 meters high and 25 meters in diameter. Beneath the cairn was a rectangular tomb measuring 13.80 meters by 1.50 meters, with a depth of 2.6 meters. The tomb had been plundered in medieval times, but fortunately, two rows of burned beams covering the shaft were still preserved. Wood and charcoal specimens were taken from these and submitted for radiocarbon analysis. The dates obtained were as follows: piece of charcoal, 4830 ± 230 BP or 2887 ± b.c. (LE-30); piece of wood, 4500 ± 120 BP or 2550 ± 120 b.c. (LE-305). The true age, based on the calibration of C14 dates, is between 3700 and 3400 BC.

There is no doubt that the grandiose Uch-Tepe tomb speaks for a ruling chieftain who held considerable power; the construction of such a tomb required a large, organized body of workmen. Kurgans discovered in Georgia also contained large wooden chambers (Samgori, Bedeni). A wagon burial, reported at Bedeni, was accompanied by gold and silver artifacts (*ibid.*:166).

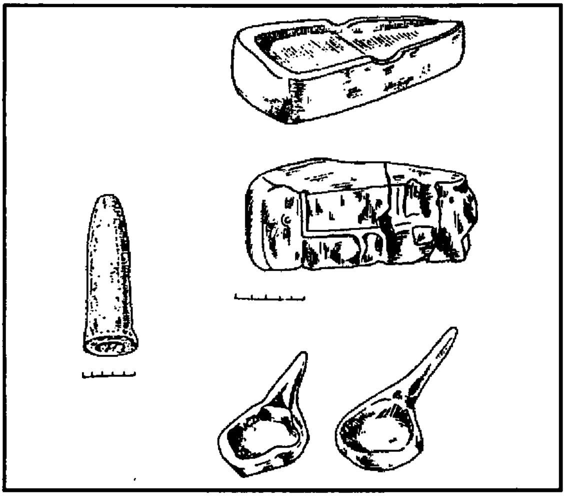


Fig. 10: Molds, nozzle, and ladles used for metallurgy in Transcaucasia (nozzle from Baba-Dervish, molds from Kül-Tepe II and ladles from Khizanaant-gora). Kuro-Araxes culture, second half of the 4th millennium BC. (*After* Kushnareva and Chubinishvili 1970.)

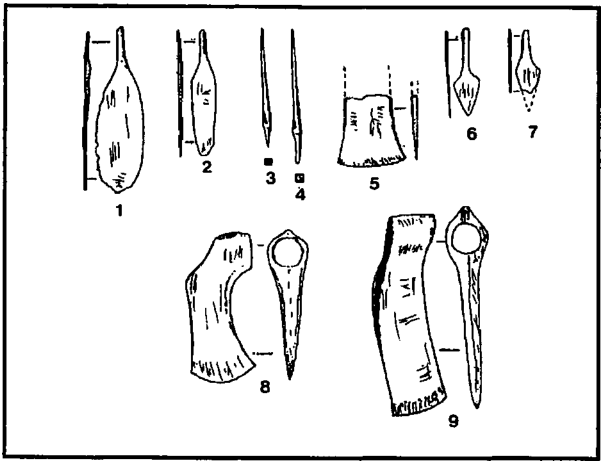


Fig. 11: Weapons and tools derived from Caucasian prototypes from north of the Black Sea and the Danube Plain. 1-2) halberd (?) blades; 3-4) awls; 5) fragment of a flat axe; 6-7) tanged dagger blades from the upper layer of the hillfort of Mikhajlovka, lower Dnieper, Ukraine; 8) shaft-hole axe from Brestovac, north Yugoslavia; 9) shaft-hole axe from Bracigovo, Bulgaria. All examples are copper and arsenic alloys.

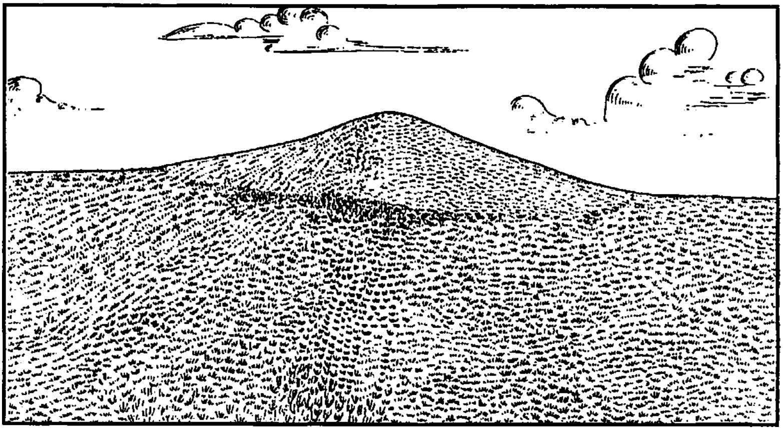


Fig. 12: Uch-Tepe kurgan. 17 meters high. Mil'ska steppe, Azerbijan. (*After* Kushnareva and Chubinishvili 1970.)

It can be surmised from the aforementioned that the Kurgan chieftains were established in the Kuro-Araxes valley by the middle of the 4th millennium BC. The Uch-Tepe kurgans, however, are not the earliest in the area. Those at Stepanakert are considered by typological means to belong to an even earlier phase (*ibid.*:62). One of the barrows at Stepanakert, No. 119, is another tomb, presumed to have belonged to a powerful chieftain. Such status is indicated by the presence of 36 skeletons of perhaps sacrificial victims on a round clay platform above the central grave in the middle of the barrow. The male in the central burial was equipped with a bronze dagger and a stone macehead. A barrow, No. 125, at Stepanakert revealed a similar sacrificial arrangement under which lay a chieftain equipped with a bronze dagger, stone macehead, five flint arrowheads, a spiral hair-ring of sheet gold, thirty obsidian blades, and a nucleus (Fig. 13). At the head and feet of the man lay skeletons of goats (Gummel 1948).

A Kurgan village discovered at Mingechaur on the bank of the Kura River consisted of four small semi-subterranean, sub-rectangular houses. These contrast with the circular or large rectangular and above-ground houses of the Transcaucasian culture. The Mingechaur houses were built of timber posts. Their walls were about one meter high and were covered by a wooden roof. The floor was of clay and a layer of pebbles, and in the center were several sunken hearths and garbage pits filled with animal and fish bones (Aslanov, Vaidov, and Ione 1959:22).

In Georgia (western Transcaucasia), Kurgan cemeteries have been excavated in the midst of the Transcaucasian culture in the region of Gori (Tkviavi), Tbilisi (Samgori), Trialeti (Paravanskoe Ozero, Zelenyj kurgan), and Sachkhere (Koreti, Nacherkezevi, Tsartsis-Gora) (Map 2). These are contemporary with several phases of the Kuro-Araxes culture (Kushnareva and Chubinishvili 1970:62).

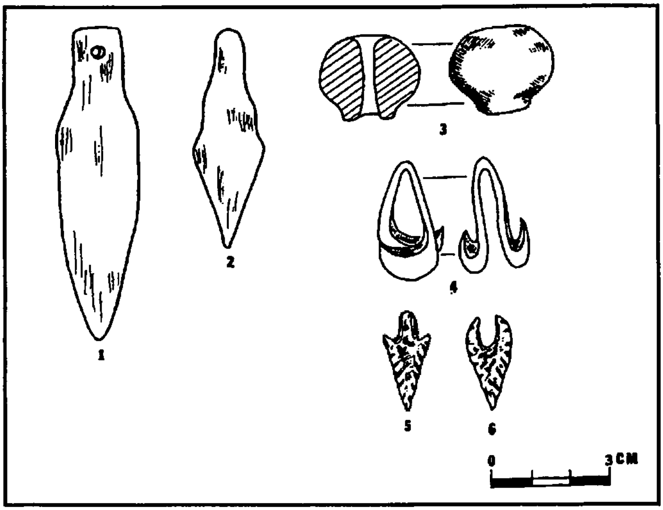


Fig. 13: 1-2) Bronze daggers; 3) stone macehead; 4) spiral hair-ring of sheet gold; 5-6) flint arrowheads from royal or warrior graves at Stepanakert, Azerbaijan. (*After* Kushnareva and Chubinishvili 1970:84.)

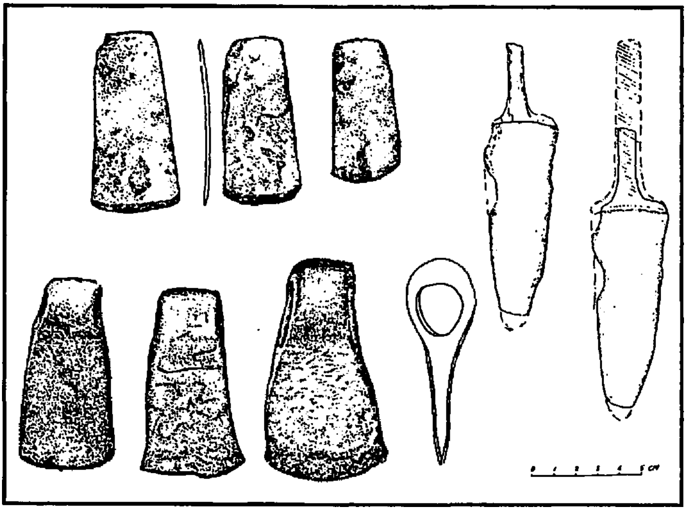


Fig. 14: Flat axes, shaft-hole axes, and daggers from the barrow (kurgan) No. 1, mortuary stone house No. 1 at Tsarskaja-Novosvobodnaja, R. Kuban Valley, northwestern Caucasus. (*After* Popova 1963:Pl. 9)

The incoming Kurgan people in Georgia and Azerbaijan were quick to adapt the metallurgical techniques of the Transcaucasians. They transmitted this metallurgical knowledge from the south to the north of the Caucasus, and thence to the Dnieper, to Central Europe, and to the Balkans.

Earliest Metal Artifacts of Caucasian Tradition North of the Caucasus Mountains and the Black Sea

Before the middle of the 4th millennium, metal artifacts north of the Caucasian range and the Black Sea are hardly known. Daggers and sleeve shaft-hole axes were made of flint and hard stone, but their shapes clearly imitated metal forms of Transcaucasia. One of the earliest metal daggers, 11 cm. long and with a triangular tang, was discovered in the settlement of Lugovo in Checheno Ingushetia, in the northeastern Caucasus. It was found accompanying a skeleton buried in the supine position under a layer of stones (Munchaev 1961:143, fig. 17). This grave is likely to be of Kurgan II date (4000-3500 BC). At Petro-Svistunovo, in a cemetery on the bank of the Dnieper in the region of the Dnieper rapids, a copper hammer-axe was found (Bodjanskij 1968:fig. 3/1). The closest analogy known to Bodjanskij comes from Rugudzha in mountainous Dagestan in the eastern Caucasus. Spectrographical analysis of this axe has not been performed. Another find of this site was a beautifully made flint dagger of rhomboidal shape, 9.8 cm. in length, apparently made in imitation of a metal dagger. Other finds were flint points, axes, and knives, as well as copper bracelets, beads and tubes, a brazier of alabaster, a pendant of cardium shell, necklaces of boar tusks, *a.o.* Petro-Svistunovo belongs to the Kurgan II period which is synchronous with the final phase of the Dnieper-Donets culture and of the Cucuteni (Tripolye) civilization in the western Ukraine. This was the time when elements of the Kurgan culture – mortuary houses built of timber or of stone slabs in shaft-graves, containing skeletons in the supine position with legs contracted and sprinkled with ochre – emerged not only in the Dnieper region, but also west of the Black Sea in the Cucuteni, East Balkan, and even in Tiszapolgár civilizations of Old Europe (Gimbutas 1970:178-179). Warriors' graves typically included triangular flint arrowheads and points, thin and sharp flint axes (imitations of flat bronze axes), spherical or pear-shaped maceheads or peculiar stone scepters in horse-head shapes.

During the following period, Kurgan III (3500-beginning of the 3rd millennium BC), daggers, flat axes, and awls made of arsenical copper are frequently encountered north of the Caucasus and in the entire North Pontic region. Their presence is documented in Stratum II of the Mikhajlovka hillfort near Kherson, lower Dnieper area.

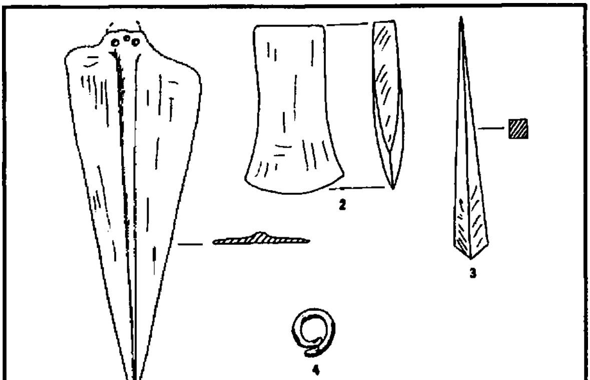


Fig. 15: 1) Silver-plated bronze dagger; 2) flat axe; 3) awl; 4) copper spiral ring from a royal burial at Usatovo, Barrow No. 3. (*After* Passek 1949.)

In the 3rd millennium BC, metal working north of the Caucasus Mountains, in the Kuban and Terek Valleys, was based on Transcaucasian metal sources and traditions (Iessen 1935; Markovin 1960, 1963; Selimkhanov 1960; Chernykh 1966). The North Caucasian Kurgan culture furthermore heavily influenced the entire North Pontic region to the Volga in the northeast and the Middle Dnieper in the northwest. Spectrographical analyses of metal finds from the Pit-grave, Catacomb-grave, and the Middle Dnieper complexes have shown that these people imported metal from the Caucasus and imitated the shapes of metal weapons, tools, and ornaments (Chernykh 1966:58-72).

The spectroanalysis of the bronze objects from the royal tombs of Maikop, Tsarskaja (Novosvobodnaja), and Kostromskaja in the River Kuban Valley in the northwestern Caucasus, excavated by N. I. Veselovskii at the end of the 19th century, has shown that some arsenical bronzes included up to 4.4 percent nickel. This high nickel content is not typical of the Transcaucasian copper ores. The new material must have been imported from either Anatolia or the Near East (Chernykh 1965:101). The typology of the finds from these royal treasures suggests wide contacts with central Anatolia, Mesopotamia, and Iran (Childe 1936; Gimbutas 1956). Flat axes, sleeve shaft-hole axes, and tanged daggers, as those from Tsarskaja (Novosvobodnaja) illustrated in Fig. 14, are numerous in the northwestern Caucasus during the middle of the 3rd millennium BC and are thought to have been produced locally (Popova 1963:43).

Another path of dispersion of bronzes from Transcaucasia must have been through central Anatolia to the Aegean, as indicated by tanged daggers (Stronach 1957: fig. 2/1). There are only several fragments of tanged daggers known in western Anatolia that may precede the Troy I period: a small fragment of a dagger at Emborio, on the island of Chios (Hood 1965) and fragments of a dagger with a median ridge from the 'Chalcolithic' level of Beycesultan in southwestern Anatolia (Lloyd and Mellaart 1962:281, fig. F. 8, 14). The material from this is as yet too scanty for conclusions. The Beycesultan and Emborio daggers could as well be derived from the northwest, via the north Aegean from the Usatovo-Ezero culture in Bulgaria, Romania, and the western Ukraine. Later daggers – from mid-3rd millennium and later – in western Anatolia indicate direct contacts through Anatolia with Transcaucasia and the Near East.

Daggers and Other Artifacts of Arsenical and Tin Bronze in Kurgan Tombs and Hillforts West of the Black Sea, in the Danubian Plain, and in the North Aegean Area

Daggers, halberds, awls, flat axes, and sleeve shaft-hole axes of arsenical copper appeared before or around 3000 BC in the western Ukraine, in Moldavia, and in the lower and middle Danube plain. They are found in association with stone battle-axes, maceheads, spiral rings of copper or silver, and flint arrowheads – either in royal or warrior graves or in hillforts.

Daggers in Royal Tombs of Kurgan Character Northwest of the Black Sea

Shaft graves covered by timber roofs, stone cairns, and earthen barrows are documented in all the above-mentioned areas. Royal tombs are distinguished by exceptionally rich grave furniture among which daggers of arsenical copper, and silver, copper, or gold spiral earrings or hair-rings are present much in the same manner as in graves of Kurgan royalty in the aforementioned tombs of Azerbaijan. The outstanding examples of Kurgan tombs northwest of the Black Sea are known from Usatovo near Odessa (two cemeteries) and Sukleja near Tiraspol (Passek 1949:195 ff; excavations at Sukleja by J. A. Stempkovski in 1896-97; at Usatovo by M.F. Boltenko in 1929 and O.F. Lagodovska in 1937) (Map 3:10, 11).

Royal barrows were surrounded by retaining walls of large yellow limestone blocks decorated with reliefs or engravings of horses, stags, dogs, men and/or gods, and geometric motifs. Such, for example, was barrow No. 3 in the cemetery of Usatovo. Its diameter was 36 meters, height 1.2 meters. The chieftain's grave was in the center and had a step-like entrance. The skeleton was supine with legs contracted upward. A silver-plated bronze dagger with triangular blade, mid-rib, and broad tang with three rivet holes (Fig. 15) was at the left hand of the deceased, *i.e.* he had been holding the dagger. A flat bronze axe, a large vase decorated with cord impressions, and a small dish painted in Cucutenian (Tripolyan) style were at his head. The grave also contained a bronze awl, square in cross-section, a copper spiral earring or hair-ring, and a large tooth of a domesticated animal, probably a horse. The shaft had been covered by a timber roof and then daubed with clay. Above it was a cupola-shaped cairn of stones. Beneath the stones, at the side of the royal barrow, were two skeletons, presumably sacrificial victims. Kurgan No. 9 was similarly constructed and contained a central shaft grave which, however, lacked rich burial equipment. Instead, a bronze dagger, an axe, an awl, and two teeth of a horse had been placed in a wooden box deposited above the grave. Kurgan No. 11 was the largest of all. It was surrounded by large limestone blocks laid horizontally in five rows. The cupola-shaped stone cairn, 14 meters in diameter, covered the central burial in a deep shaft. Unfortunately, the royal tomb had been plundered in antiquity. At the side of the central grave was a woman's burial, apparently a chieftain's wife. Her grave goods included silver spiral earrings or hair-rings, a large bronze awl, necklaces of black stone beads and of bone, a pot decorated with cord impressions, and a painted pot of Cucutenian craftsmanship. The royal barrow at the cemetery of Sukleja was also surrounded by a cromlech, and contained a central grave. This grave yielded a bronze dagger and a silver spiral with thickened ends of the same type found in the Usatovo graves (Fig. 16).

In cemeteries with cremation graves of the Sofievka group, such as at Chervonyj Khutor on the Dnieper bank near Kiev, probably of a somewhat later period than Usatovo and Sukleja, rich graves also included daggers, halberds (Fig. 17), copper spirals, stone battle-axes, and flint knives. Silver-plated daggers and silver spirals apparently belonged only to the mightiest and wealthiest rulers. The content of the royal tombs is the same even in the later Bronze Age periods and in differing geographical locations.

The chronology of the Usatovo complex is indicated by the following radiocarbon dates for two sites obtained from charcoal and animal bones:

Usatovo:	4330 ± 60 BP	2380 b.c.	(UCLA-1642A)
Majaki:	4400 ± 100 BP	2450 b.c.	(Bln-629)
	4375 ± 60 BP	2425 b.c.	(UCLA-1642b)
	4375 ± 60 BP	2425 b.c.	(UCLA-1642g)
	4340 ± 65 BP	2390 b.c.	(Leningrad Lab.)

Calibrated dates: 3000-3400 BC

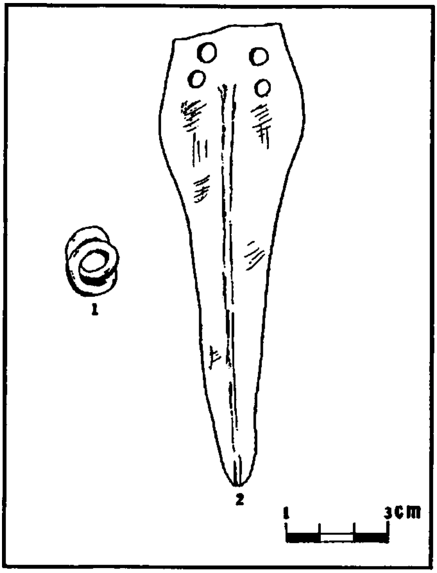


Fig. 16: 1) Silver hair-ring and 2) bronze dagger with four rivet holes from a royal grave in a barrow at Sukleja near Tiraspol, western Ukraine. (*After* Passek 1949.)

Eight metal objects – daggers, flat axe, celt, chisel, halberd – from the Usatovo sites were analysed. All of them were arsenical alloys with 0.90-1.90 percent arsenic content (Chernykh 1966:57, Nos. 387-394). This composition differed distinctly from that of the Tripolye metal finds from the western Ukraine and Soviet Moldavia shown to be of pure copper (Chernykh 1966:58). The Caucasian metallurgical tradition must have arrived in this region with the Kurgan people. Most of the Usatovo bronzes have close relatives in Transcaucasia. One of the blades from the site of Veremiye of the Sofievka group has an almost identical parallel in Georgia (Tavadze and Sakvarelidze 1959: Pl. III, 1-3). The tanged daggers and halberd blades of the Usatovo complex do not have exact parallels in the Caucasus and possibly were produced locally.

The mid-rib is a structural feature of functional importance since it adds greater strength to the dagger blade. The chronological position of the Usatovo complex and relative frequency of daggers with a mid-rib in the western Ukraine (*cf.* Figs. 15/1, 16/2, 17/1) and Romania suggest that they are prototypes of the mid-ribbed daggers of the Aegean – known from Zygouries near Corinth in the Peloponnese (Blegen 1928:182, Pl. XX, 25) and from Platanos and Pyrgos in Crete (Zervos 1956: Pls. 192, 193; Junghans, Sangmeister, and Schröder 1968:9368, 9383), which have been dated to the Early Helladic II and Early Minoan II period, *c.* 2600-2300 BC. This mid-rib innovation was also introduced to the entire Danube plain (*cf.* Fig. 20/1) and thence to Italy. The spectrographic analysis has shown the mid-ribbed daggers to be made of a copper-arsenic alloy.

Accumulation of Weapons and Tools in Hillforts

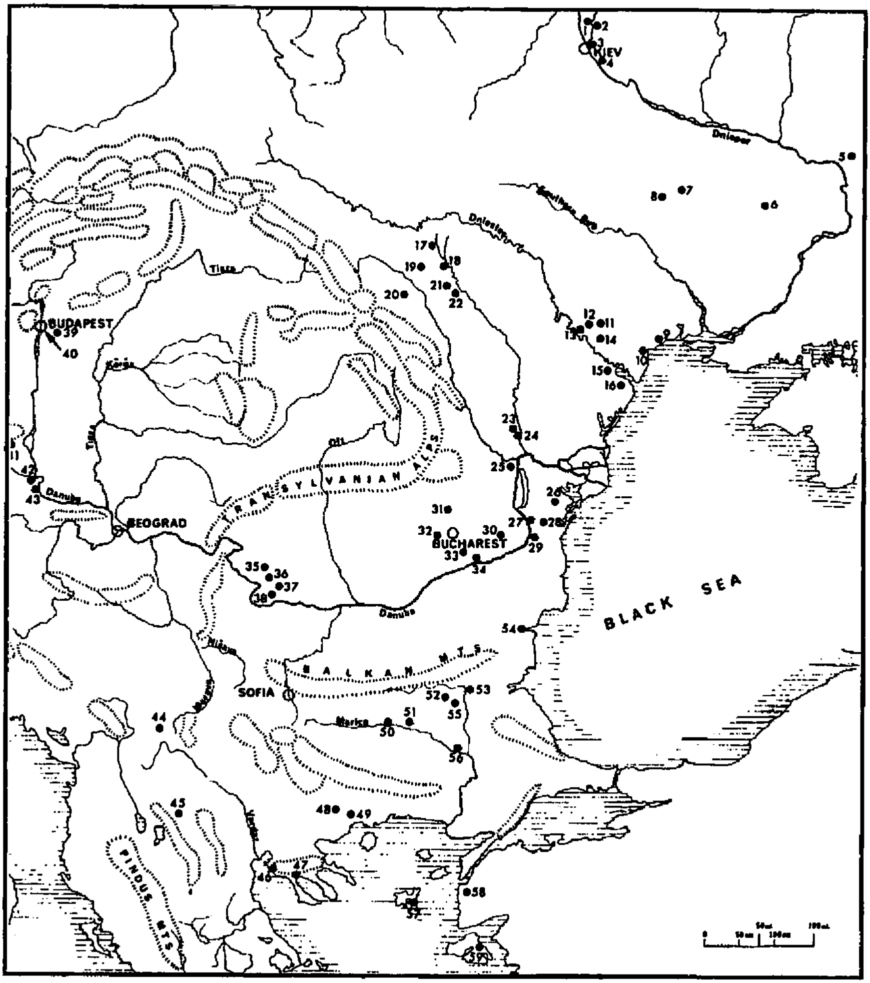
A chain of hillforts (acropolises) appeared on the Danubian and Marica plains, and in the north Aegean and western Anatolian areas. They are clearly related in character to hillforts north of the Black Sea, such as Mikhajlovka and Skela in the lower Dnieper region (Lagodovska, Shaposhnikova, and Makarevich 1962). Hillforts were arranged on naturally protected hills surrounded by rivers or swamplands, or atop high mounds – originally Neolithic tells of Old Europe. These served as tribal centers in the manner of the Mycenaean citadels. Metal finds and fine pottery indicate that the most highly skilled craftsmen, including those of the subjugated population, were housed within the fort.

Among the outstanding and systematically excavated acropolises are Troy I in northwestern Turkey (Blegen *et al.* 1950-58); Mikhalič, Ezero, and Karanovo in the Marica plain of central Bulgaria (excavations by V. Mikov, G. Georgiev, and N. Mérpert; Mikov 1948; Georgiev and Merpert 1966; Merpert 1971); Sitagroi in the plain of Drama in northeastern Greece (Renfrew 1970); Vučedol and Sarvaš at Vukovar on the River Sava in northwestern Yugoslavia (Schmidt 1945); Nagarpád at Pécs in southwestern Hungary (excavation by Bandi 1966, unpublished); Jevišovice in Moravia (Medunova-Benešova 1972) (Map 3: 5, 27, 29, 32, 33, 41-45, 48-59).

Nearly all hillforts show a long occupation; their chronology is established by stratigraphy, typology, and C14 dates. The calendar years indicate a time span between 3500 and 2300 BC. (See Appendix to this article.)

Old European and west Anatolian towns, such as Poliochni on Lemnos and Thermi on Lesbos, seem to have been converted into citadels. Their central areas were occupied by the ruling class, and the towns were surrounded by heavy fortifications. The defenses are identified with the second period of Poliochni (Poliochni Blue), which equates them with the beginning of Troy I (Bernabò Brea 1955, 1964), and in Thermi with Period III (Lamb 1936:24). The fortifications were extended and strengthened in succeeding periods.

Bronze daggers, halberd blades, flat sharp axes, shaft-hole axes, awls quadrangular in cross-section with a bulge in the middle, chisels, battle-axes and maceheads of semi-precious stone, and flint arrowheads were found in the above-



Map 3: Kurgan cemeteries, hillforts, and other sites bearing Kurgan elements or influences north and west of the Black Sea and in the Danubian and Marica plains and in the North Aegean area, 3500-2500 BC.

mentioned hillforts and fortified towns. In the hillfort at Crivaţ, located on the bank of the R. Argeş in southern Romania, a sleeve shaft-hole axe, a flat axe, and a dagger blade with four rivet holes and a broad mid-rib were discovered (Fig. 18). This hillfort has also yielded a miniature clay copy of a four-wheeled vehicle (Berciu 1966:529-535).

Local production is evidenced by clay molds, some of them bivalved, which have been found in Thermi, Troy, Poliochni, Ezero, and Sarvaš (Fig. 19). At Thermi, one of the clay molds was for a dagger with a mid-rib. The peat-bog of Ljubljana (Laibach), northwestern Yugoslavia, also yielded clay bivalved molds for shaft-hole axes and flat axes (Archaeological Museum, Ljubljana).

The presence of tin bronze has been evidenced in Troy I (a ring of tin bronze), Thermi (a pin of 13.10 percent tin and a pure tin bangle), Poliochni (a dagger of the 'Blue Phase'), and at Sitagroi. A dagger blade with a pronounced mid-rib found in Lovas near Zagreb, Yugoslavia, had a 10 percent tin content (Fig. 20), and a very thin dagger blade with four rivet holes from a grave in the Baden cemetery of Budakalász near Budapest was an arsenical alloy (Fig. 20/2). The Budakalász cemetery is also known for a clay model of a four-wheeled vehicle.

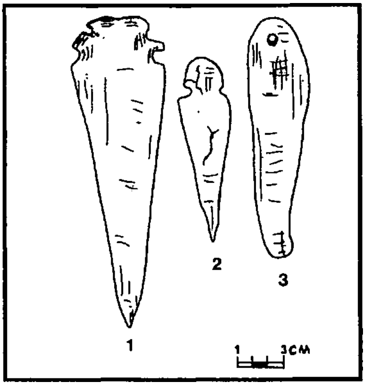


Fig. 17: 1) Dagger; 2) halberd; 3) blades from cremation graves at Chervonyj Khutor on the Dnieper bank near Kiev. (*After* Shmaglii 1966:Pl. 1.)

Map 3 Key:

1. Chernin
2. Evminka
3. Sofievka
4. Krasnyj Khutor
5. Mikhajlovka
6. Kolodistoe
7. Serizlievka
8. Ol'šanka
9. Usatovo
10. Odessa
11. Sukleja
12. Krasnogorka
13. Ternovka
14. Parkany
15. Tudorovo
16. Šabalat
17. Horodiştea
18. Glavaneştii Vechi
19. Corlateni
20. Suceava
21. Valea Lupului
22. Holboca
23. Foltesţi
24. Stoicani
25. Brailiţa
26. Baia Hamangia
27. Hirşova
28. Casimcea
29. Cernavoda
30. Gubaneşti
31. Ploeşti-Trias
32. Crivaţ
33. Glina
34. Gumelniţa
35. Verbiţa
36. Pleniţa
37. Salcuţa
38. Seaca de Cîmpie
39. Pécel
40. Budakalász
41. Nagyarpád
42. Sarvaš
43. Vučedol
44. Hisar
45. Šuplevec
46. Kritsana
47. Aghia Mamas
48. Sitagroi
49. Dikili Tash
50. Iaša Tepe
51. Sv. Kirilovo
52. Karanovo
53. Veselinovo II
54. Ezerovo
55. Ezero (Dipsis)
56. Mikhailič
57. Poliochni
58. Troy
59. Thermi

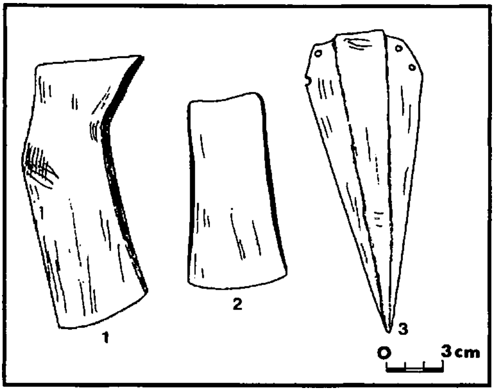


Fig. 18: 1) Shaft-hole axe; 2) flat axe; and 3) dagger from the hillfort at Crivaţ, lower Danube, Rumania. Cernavoda complex. (*After* Berciu 1966.)

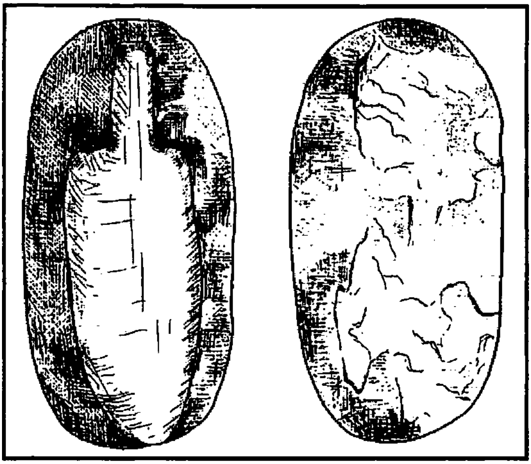


Fig. 19: Bivalve mold for a halberd blade from the hillfort of Sarvaš, northern Yugoslavia. 21 cm. long. Baden culture. (*After* Schmidt 1945: Textbild 11A.)

Early Bronze II Hoards and Treasures

This period – the middle part of the 3rd millennium BC – is famous for a number of fabulous gold treasures – found in Troy IIa and Poliochni (Vano N. 643). Comparable accumulations of wealth comprising an enormous amount of gold, silver, and precious stone ornaments, animal figures, vases, bronze weapons and tools, etc., are known from the royal tombs or hoards of Alaca Hüyük and Horoztepe in the Ankara region of Turkey, and of Maikop, Tsarskaja, Kostromskaja, and Staromyshastovskaja in the northwestern Caucasus. This kind of richness speaks for a consolidation of power in the hands of Kurgan (Indo-European) rulers who controlled the man power, natural resources, and the trade of large territories.

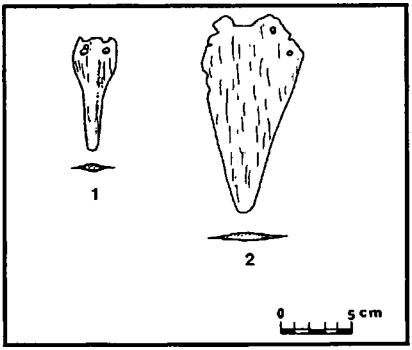


Fig. 20: Bronze dagger blades from 1) Lovas, northern Yugoslavia (tin bronze); 2) Budakalász at Budapest (arsenical bronze). (*After* Junghan, Sangmeister, and Schröder 1968: 8534 and 6470.)

In the middle of the 3rd millennium BC hoards of weapons and tools also emerge in the Aegean area and central Europe. Daggers, axes of several kinds, and chisels were kept in store, and some of the items may have been used as currency for trade or exchange. The types of weapons and tools that appear in hoards are clearly of Kurgan character recognizable in the continuous tradition of Caucasian shapes. This tradition is characterized by battle-axes (hammer-axes with a knob at one end), axe-adzes, sleeve shaft-hole axes, flat axes, chisels, and tanged daggers. The best examples in the north Aegean region are the hoards from Poliochni, 'Hoard Vano 829' (Fig. 21), and from Petralona cave in Khalkidhiki, south of Thessaloniki (Fig. 22). The shaft-hole axe, flat axes, and chisels from the hoard of Petralona were spectrographically analyzed, and all show an arsenic content of 1.6 to 3.4 percent (Junghans, Sangmeister, and Schröder 1968:9333-9342).

Hoards of similar composition do not appear south of Attica (Branigan 1969), but an impressive store of nearly 7 kilos came to light on the island of Kythnos in the Cyclades. The hoard contained three flat axes, three chisels, three battle-axes, and an axe-adze (Renfrew 1972:Pl. 17). The latter has close parallels in Eutresis, Hoard 4, in Boeotia, and in the royal tomb of Maikop, which indicates the date of the hoard. The battle-axes have numerous parallels in bronze and in stone in the Maikop culture north of the Caucasus range (*cf.* Vozdvizhenskaja: Chernykh 1966:fig. 28, 34), the Danube as far as Slovakia (Novotná 1955:Pl. I/6), as well as in the Catacomb-grave culture north of the Black Sea. Analogies are also known in the so-called 'continental' phase of the Corded complex of Central Europe where they appear made of semi-precious

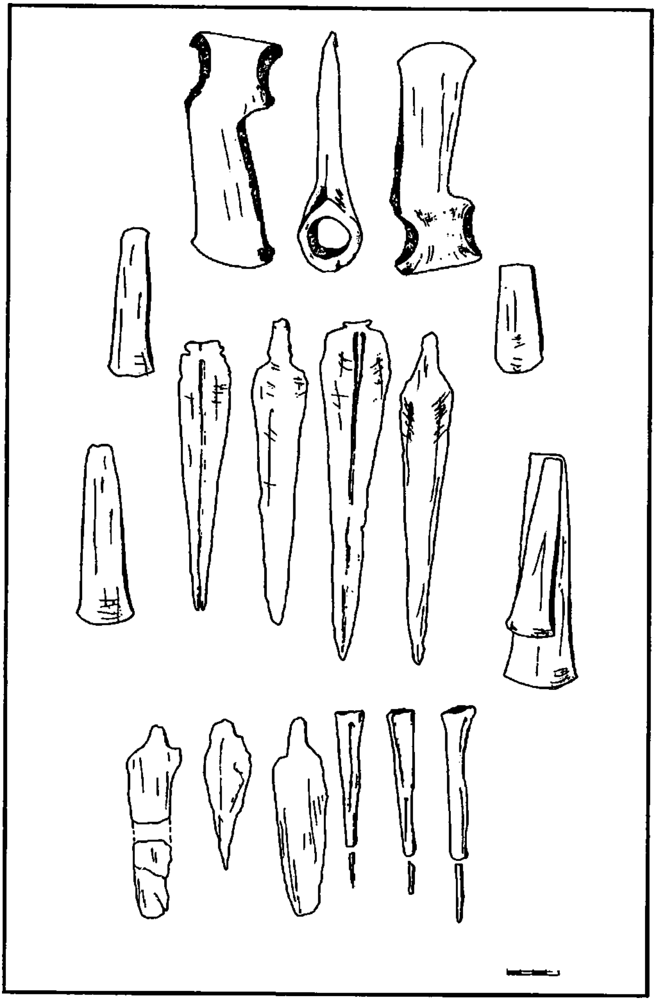


Fig. 21: Shaft-hole axe, flat axes, tanged and mid-ribbed dagger blades and awls with bone handles from Poliochni on Lemnos, north Aegean. Probable date: middle of the 3rd millennium BC. (*After* Bernabò Brea 1964:Pls. 171-174.)

stone. These complexes belong to the Kurgan IV period. It seems unlikely that such forms as represented by the Kythnos hoard could be of local, Aegean *(i.e.* Old European), origin as Renfrew assumes (Renfrew 1972:326). The consistency in contents and the striking parallels in the Ponto-Caucasian region, the Balkan Peninsula, and the whole Danubian area suggest that the phenomenon of hoards cannot be excluded from the complex of elements brought by the Indo-European (or Kurgan) people.

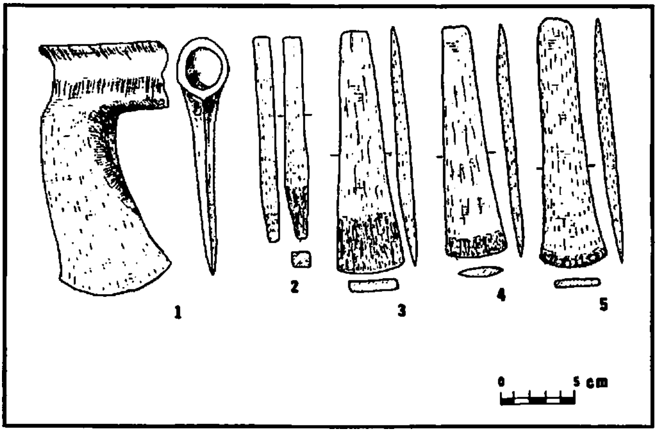


Fig. 22: The hoard of Petralona south of Thessaloniki, northern Greece. 1) shaft-hole axe; 2) chisel; 3-5) flat axes. Probable date: Early Helladic II (middle of the 3rd millennium BC). (*After* Junghans, Sangmeister, and Schröder 1968.)

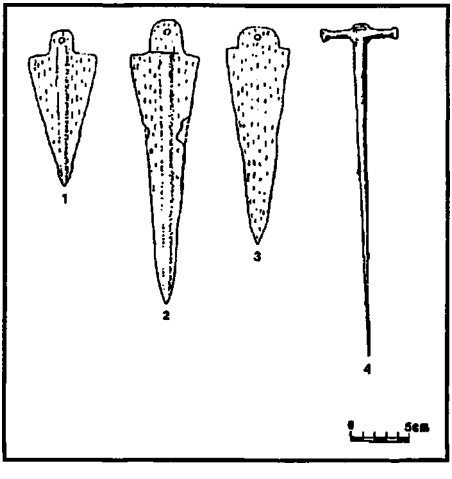
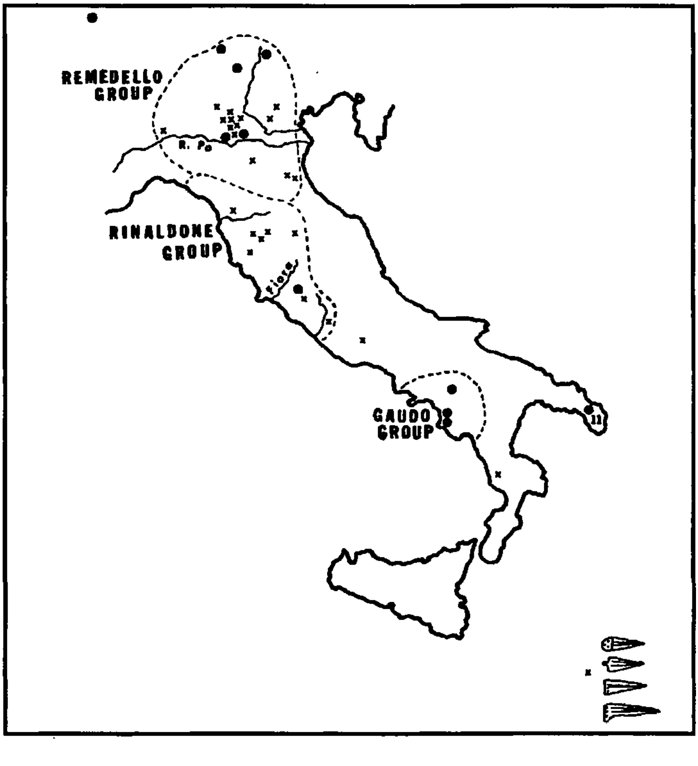


Fig. 23: Bronze daggers and a silver pin from the Remedello cemetery near Brescia, northern Italy. (*After* Colini 1901.)

The flow of entirely new cultural elements (burial rites, stratified society, religious symbols) together with hoards or single finds of sharp flat axes, battle-axes, and daggers of arsenical or tin bronze, reached the Salzburg area in Switzerland (Mondsee group), Bavaria (Altheim group), Bohemia, Schönfeld group in central Germany, and along the upper Danube, the Nördlinger Ries, and Unterfranken in western Germany (Junghans *et al.* 1968:26).

The Emergence of the Bronze Age in Italy: Early Bronze Age Daggers and Halberds in Tombs and Engraved on Rocks

The appearance of bronze daggers and halberds together with stone battle-axes in the River Po Valley, Tuscany, and Campania marks the beginning of the Bronze Age in Italy. These weapons were found in the cultural complexes known as Remedello (Po Valley), Rinaldone (Tuscany), and Gaudo (near Salerno, Campania) and are entirely foreign to previous developments in Italy (Map 4). Most archaeologists refer to this period as the "Copper Age" or "Chalcolithic." This is erroneous inasmuch as the daggers and halberd blades were of arsenical bronze. New metallurgical techniques had arrived in Italy possibly from the Danubian plain, as spectrographic analyses have shown close similarities of Remedello and Rinaldone bronzes to those of the Vučedol, Ljubljana (Laibach) in northwestern Yugoslavia, and the Mondsee and Altheim groups on the upper Danube (Junghans *et al.* 1960:69, 1968:163).



Map 4: Early Bronze Age Italy indicating three major groups: Remedello, Rinaldone, and Gaudo.

Remedello, named for a cemetery near Brescia in the River Po Valley, is known from a number of cemeteries (Colini 1901). The crouched skeletons in pit-graves were accompanied by tanged daggers, triangular daggers with mid-rib, tang and single rivet, by flat axes, awls with square sections, flint arrowheads and leaf-shaped halberd blades, stone maceheads, and, in one case, a crutch-headed silver pin of Caucasian type (Fig. 23). The Remedello people diffused further to the western part of Italy. Sites of Remedello character at Vecchiano near Lucca, where a dagger and tanged arrowheads were found, and at Montebradone at Volterra, where four Remedellian daggers were found, are connecting links between the River Po Valley and Tuscany. The rise of metallurgy in Tuscany was obviously supported by metal sources in Collina Metallifere and Monte Amiata (Trump 1966:70ff).

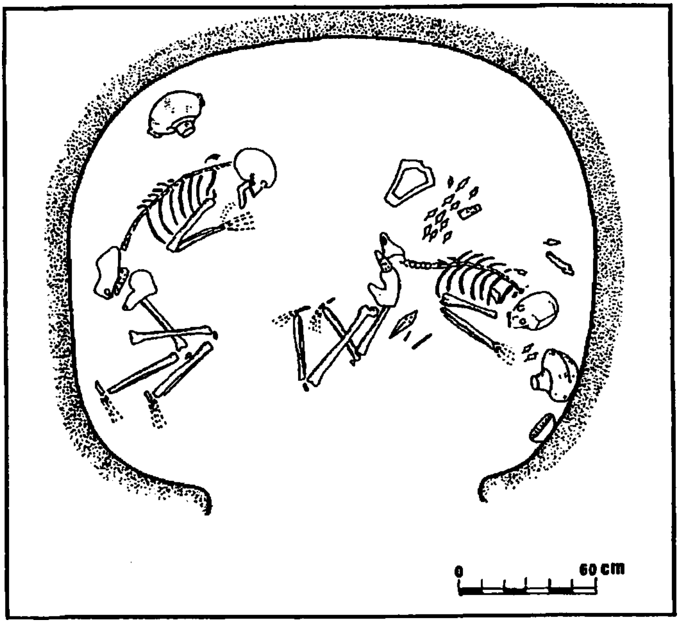


Fig. 24: Tomb of the Widow, Ponte San Pietro. Rinaldone group, Tuscany. (*After* Trump 1966.)

The Rinaldone materials come solely from tombs – either from pit-graves as in Remedello, or from natural caves and stone-built cists. In exceptional cases, tombs are chambers cut into rock and sealed with a slab. An outstanding example of a burial in Tuscany bearing Kurgan characteristics is the "Tomb of the Widow" on the bank of the River Fiora at Ponte San Pietro (Fig. 24). Such tombs may represent a form of *suttee*, since the skull of a young woman showed signs of injury. The deceased male was richly equipped for the afterlife: a globular jar and a deep dish were placed above his head, a fine polished battle-axe with a knob at one end and flint arrowheads were arranged beneath his head, and at his elbows were a bronze dagger with three rivet holes in tang and a mid-rib, a bone for sharpening, and an awl. Behind his back were twelve arrowheads laid between a flat bronze axe and an object made of deer antler. In other Rinaldone tombs, remnants of a horse sacrifice and dog burials indicate Kurgan burial practices. The most common type of beads among grave goods were made of wolf or dog incisor teeth.

A third related group was centered in Campania. It is named Gaudo for a cemetery of chambered tombs at Paestum in the province of Salerno. The Gaudo and several other cemeteries at Buccino and Mirabelle Eclano near Salerno include oven-shaped tombs with a vertical shaft. The equipment is related to the Remedello and Rinaldone grave goods, and is characterized by bronze and flint daggers, flint arrowheads, globular jars, dishes, and *askoi.*

A typical find comes from an oven-shaped tomb at Mirabelle Eclano, reached by an axis shaft. The tomb was occupied by a single male burial. It contained three dagger blades, an axe, forty-one tanged flint arrowheads, two long flint blades, microliths, a bone scepter, six large vases, and a dog skeleton (Holloway 1973:14).

Radiocarbon dates for the Italian Early Bronze Age have been obtained from several sites including the following:

Buccino tombs near Salerno
    2580-1970 b.c.; average 2300 b.c. (Holloway 1972)
Grotta Piccioni
    2356 ± 105 b.c.; corrected: 2900 BC (Pi-50)
Grotta Romita di Asciano
    2298 ± 115 b.c.; corrected: 2800 BC (ZPI-100)
The true age of these dates is 2900-3400 BC

Analogies for Remedello dagger blades in Byblos north of Beirut, Lebanon, (Fig. 25) led archaeologists to believe that the prototype for Italian daggers must have come from the East Mediterranean, or at least from the Aegean area (Colini 1901; Barfield 1969). However, the context in which the daggers were found in the so-called "Eneolithic" graves of Byblos and Italy suggest that more intimate relationships than trade united these people. In both areas, deep shaft-graves and warrior equipment are found. In the Byblos graves were found spherical and pear-shaped maceheads, battle-axes, and arrowheads (Dunand 1937-1939, I:434-449), almost identical to those found in the Gaudo and Rinaldone groups. Very similar dagger blades with three rivet holes have been found in Sardinia, Bulgaria, and the East Mediterranean (Fig. 27). Furthermore, shaft-graves with tombs in oven-shaped niches are reported from the entire Palestinian coast. Analogous finds came to light at Bâb edh-Dhrâ on the eastern side of the Dead Sea (Lapp 1968). Here, use of large shaft-tombs contrasted sharply with previous local burial practices. The emergence is interpreted as an ethnic shift; the local Ghassulian culture was replaced by newcomers. According to Lapp, this cultural disjuncture occurred in the 32nd century BC. The newcomers must have been of Indo-European (Kurgan) stock and probably reached the East Mediterranean coasts via the sea.

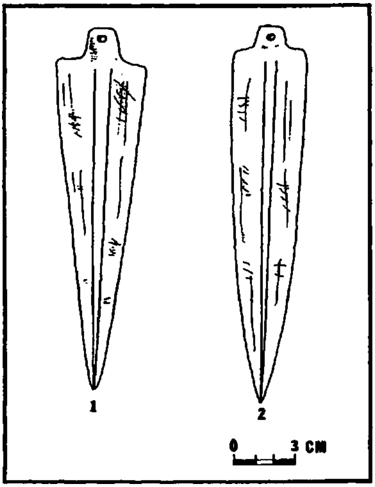


Fig. 25: Remedello and Byblos daggers.

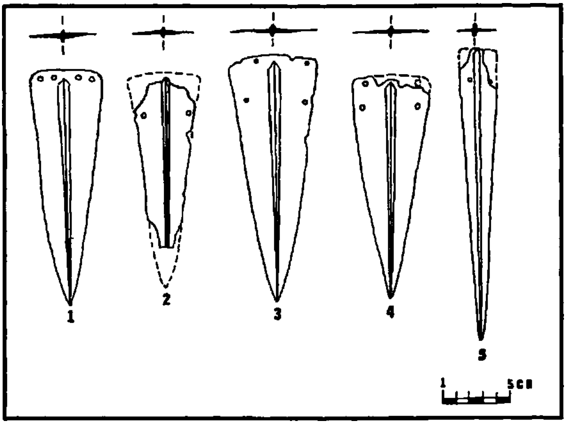


Fig. 26: Daggers from 1) Remedello; 2) Agios Onouphrios; and 3-5) Koumasa.

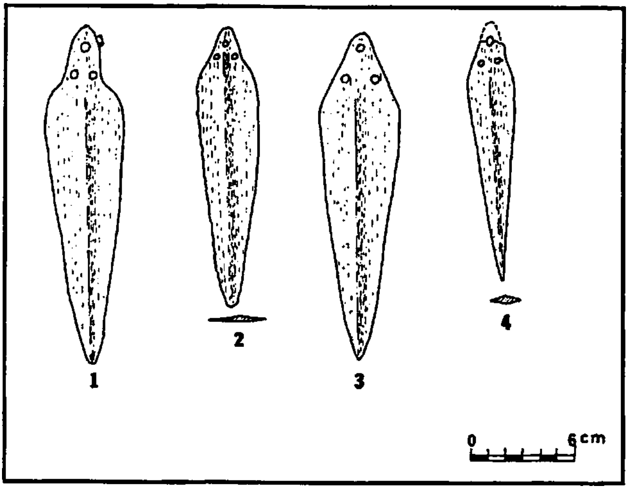


Fig. 27: Dagger blades with three rivet holes from 1), Byblos; 2) Sardinia; 3) Castiglione del Lago, River Po Valley; and 4) Arčar, Bulgaria.

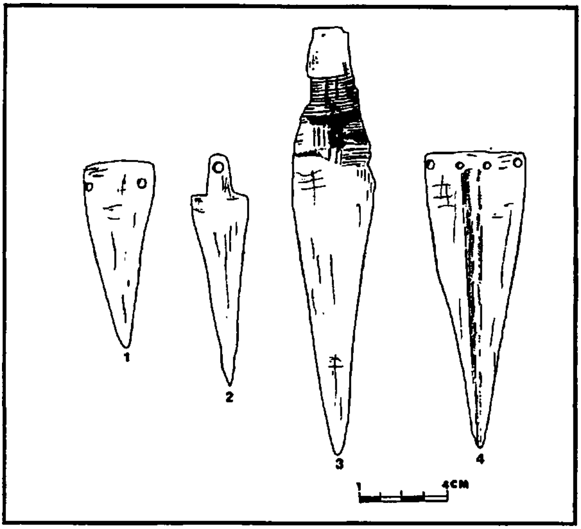


Fig. 28: A halberd blade (1) and three daggers from St. Blaise, Neuchâtel district, Switzerland.

Striking parallels with Italian daggers are known from Crete. Branigan has studied three silver dagger blades with high mid-rib and straight blade from the Agios Onouphrios and Koumasa tombs (Fig. 26). Their proportions, rivetting systems, and profiles suggest they do not belong to the Aegean and Minoan tradition of metal working but are of Italian origin. More specifically, they are stated to have been imported to Crete from Tuscany or the Po Valley (Branigan 1971:48-51). Almost identical dagger blades in the River Po Valley are known as 'Villafranca type' (Ghislanzoni 1932). The date of the Cretan blades is Early Minoan I or II, more likely Early Minoan II (Branigan 1971:52). Navigation across the Adriatic and Mediterranean Seas is furthermore confirmed by the presence of Minoan motifs (a dove-shaped vase with a double axe, horns of consecration) on Vučedol ceramics found in the citadel of Vučedol, northwestern Yugoslavia (Schmidt 1945; Gimbutas 1970:184).

Close analogies for Remedello daggers and halberds came to light north of the Alps in the area of Neuchâtel, Switzerland. At least two locations are known in which tanged daggers and triangular daggers with four rivet holes (the 'Villafranca type') were found. They are at Vinelz and St. Blaise, both of the Auvernier group, related to the Corded Pottery complex of Central Europe (Fig. 28). The 'Auvernier' layer of the inundated lake shore settlement near Geneva has been dated by tree-ring and corrected radiocarbon dating to 2450 BC (Suess and Strahm 1970).

Remedello, Rinaldone, and Gaudo dagger blades were spectrographically analyzed and found to be alloys, predominantly arsenical. Several dagger blades from the Buccino graves were analyzed by spark-emission spectroscopy and showed a 5 percent arsenic content (Grossman 1973:16). In a study of Early Bronze Age metal groups by Junghans, Sangmeister, and Schröder, the Italian daggers are classed as 'group C3'.

Daggers, Halberds, and Axes Engraved on Rocks and Stelae

Representations of daggers, halberds, and axes engraved on rocks are relevant to this study because they portray the same type of weapons as were found in tombs. In the engravings, the daggers are portrayed with handles; the halberds and axes are shafted. They give, therefore, the image of the complete weapon. Many examples exist at Valcamonica, Valtellina, Alto Adige, the valleys of the Italian Alps, and at Valais in western Switzerland (Figs. 29-32). The engraved daggers depicted in the given examples are of Remedello type; some show a mid-rib; the blades are triangular. In the classification of Valcamonica rock engravings by Anati, they belong to the period II – III (Anati 1972:24-25).

The engravings of weapons on rocks and stelae in the Alpine region have parallels with those in the Crimea, the Ukraine, and Romania of the Kurgan III and IV periods, *i.e.*, the first half and the middle of the 3rd millennium BC (Häusler 1966; Telegin 1971). Rock engravings in southern Sweden also include representations of weapons, but most of those depicted are of a later Bronze Age date.

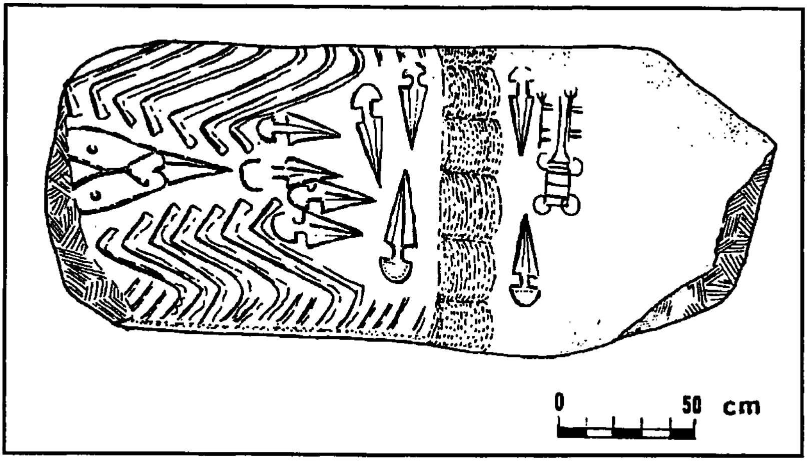


Fig. 29: Anthropomorphic stele from Lagundo, Alto Adige, engraved with daggers, shafted axes (or halberds), a belt, and a four-wheeled vehicle.

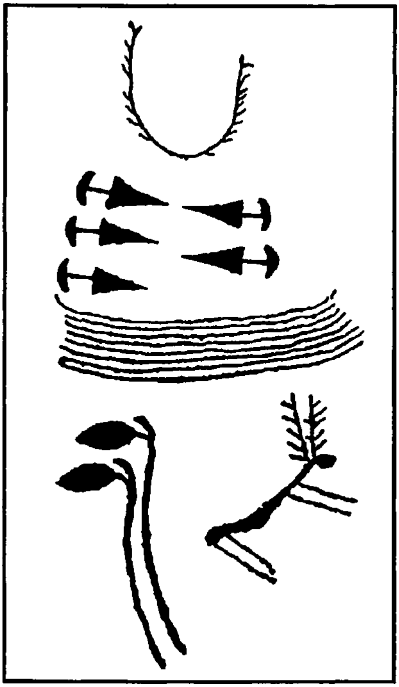


Fig. 30: A composition of daggers, halberds, belt, necklaces, and stag engraved on a rock at Dur Pini in Paspardo, Valcamonica.

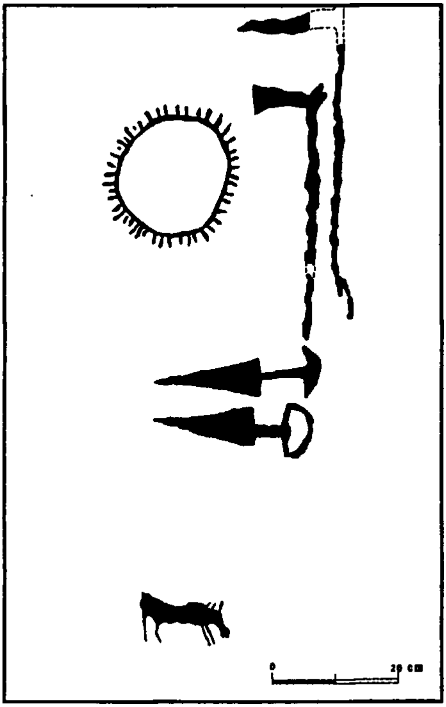


Fig. 31: A composition of weapons, sun, and horse on a rock in Cemmo in Capo di Ponte, Valcamonica.

Compositions engraved on stone stelae or rocks present the earliest known visual images of Indo-European warrior gods. Some figures are semi-anthropomorphic, having heads and arms, but the majority are abstract images in which the god is represented by his weapons alone, or by weapons in combination with a belt, necklace, double spiral pendant, and the divine animal – a horse or a stag. In several of the compositions, a sun or stag antlers occur in the place where the god's head should be (Fig. 30). In others, the god's arms are represented as halberds or axes with long shafts (Fig. 29). One, three, seven, or nine daggers are placed in the center of the composition, most frequently above or below the belt.

The rock engravings indicate that this weapon was given special significance from the earliest time of its production. Weapons obviously represented the god's functions and power and were worshipped as representations of the god himself. The sacredness of the weapon is well evidenced in all Indo-European religions. From Herodotus we know that the Scythians made sacrifices to their sacred dagger, *Akinakes*.

No previous engravings or images of weapon-carrying divinities are known in the Neolithic Alpine region.

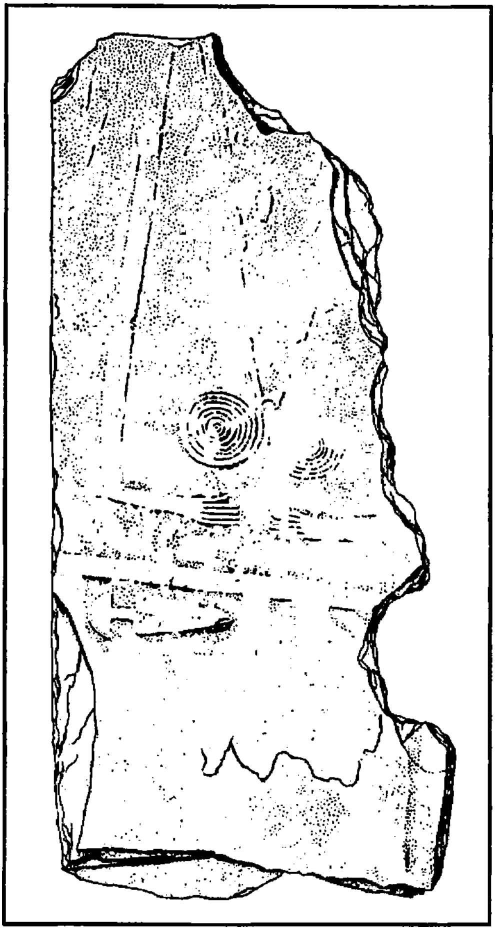


Fig. 32: Stele from Sion at Petit-Chasseur, Switzerland, with representation of arms, necklace with a double-spiral pendant, belt, and a dagger.

Bronze Daggers in Kurgan Burials of Greece

The beginning of Early Helladic II is marked by the appearance of bronze daggers and graves bearing Kurgan characteristics in Greece (Map 5). The earliest cemetery with tumuli is Steno in the Plain of Nidhri, on the island of Leukas off the western coast of Greece. In this cemetery, 33 tumuli of various proportions were found, and several were excavated by Dörpfeld (Dörpfeld 1927). The larger barrows contained mortuary chambers dug into virgin ground; these were roofed and lined with stone walling. Other tumuli contained burials in

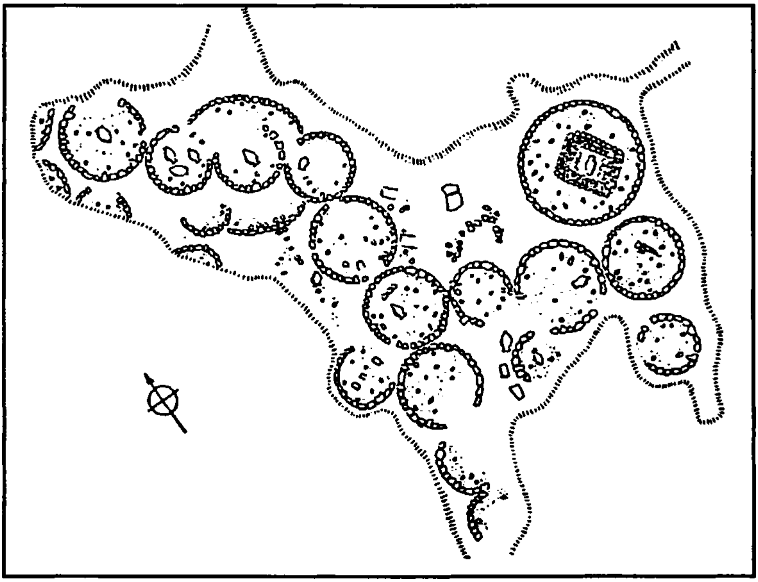
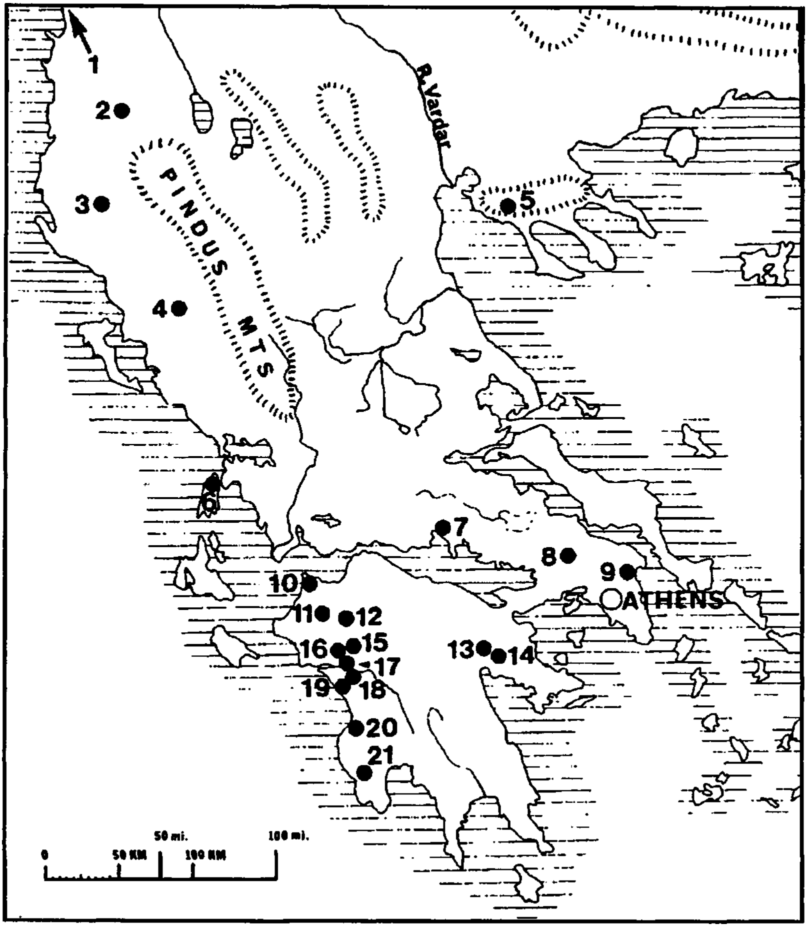


Fig. 33: Plan of the tumulus ('kurgan') cemetery at Steno in the plain of Nidhri, Leukas.

pithoi placed in small cists. The dead were burned although often incompletely. The tumuli were typically surrounded by stone rings (Fig. 33). The largest tumulus, Grave R-26, covered a chamber containing the skeletons of a man and a woman, the latter probably a *suttee* burial (Fig. 34). The chamber was dug beneath a circular platform of stones. The entire tumulus had a stone retaining wall. The warrior or chieftain in the tumulus, Grave R-17 A, was buried with bronze daggers having mid-ribs and four rivet holes (Fig. 35/2,3). He also was equipped with a gold sheath for the dagger hilt (Fig. 35/1). The Steno tumuli are dated by the presence of peculiar vases called sauce boats, diagnostic of the Early Helladic II period. This suggests the mid 3rd millennium BC as the date for the royal burials of Steno. Close analogies for Steno burials and daggers are known from Montenegro, western Yugoslavia. There, at Mala Gruda, near Tivat, a large royal tumulus has been excavated. Its central grave, which resembles a huge stone coffin, yielded a gold dagger blade and a silver axe with a tubular shaft hole (Jovanović 1972). This royal tomb is dated to about the mid 3rd millennium BC on the basis of typological comparisons with finds from the Vučedol hillfort and the Ljubljana peatbog of northwestern Yugoslavia, which makes the Mala Gruda royal tomb contemporary to, or earlier than, the Steno royal burials. Other analogies are in Albania where several Kurgan cemeteries have been excavated at Pazhok, Vodhinë, and Vajzë (Hammond 1967). The earliest Albanian tumuli probably date from the mid 3rd millennium BC (Early



Map 5: Kurgan sites (barrow cemeteries and hillforts) and hoards in Albania and Greece from the Early Helladic II to the beginning of the Middle Helladic period. *Key:* 1) Mala Gruda; 2) Pazhok; 3) Vajzë; 4) Vodhinë; 5) Petralona cave; 6) Steno, island of Leukas; 7) Kirrha; 8) Thebes; 9) Marathon; 10) Araxos-Kastro Kalogrias; 11) Elis; 12) Armatova; 13) Mykenai (Mycenae); 14) Berbati; 15) Magyra; 16) Drouva at Kaphania; 17) Olympia; 18) Makrysia; 19) Kleioi near Samikos; 20) Peristeria; 21) Volimidia.

Helladic II) although the majority of excavated tumuli belong to the Middle Helladic period.

A series of tumuli, including Kurgan type burials, have been identified and excavated in the western and northern Peloponnese and in Attica (Schachermeyr 1971:404-417). Outstanding examples are from Volimidia at Chora, north of Pylos, excavated by Marinatos in 1964. One of the graves was inside a stone-

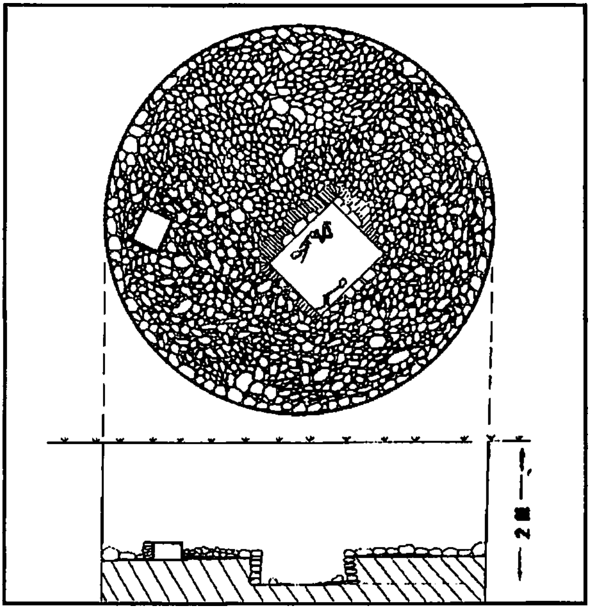


Fig. 34: A plan and section of a royal tumulus with a large rectangular grave in the middle in which a man and woman were buried together. Grave R-26, Steno, Leukas.

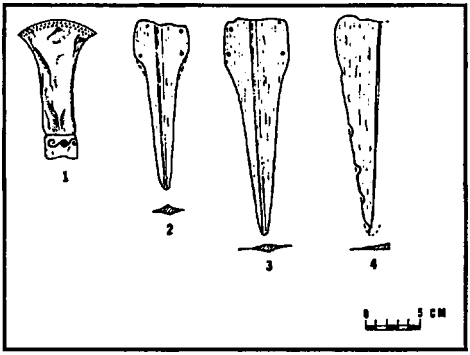


Fig. 35: 1) Sheet gold handle of a dagger; 2-4) dagger blades from Tomb R 17a at Steno, Leukas. Early Helladic II.

lined shaft and contained four bronze daggers, forty-two flint arrowheads, and twenty-four vases, some of which served as braziers. Stone cairns with stone rings are known from the hillfort of Olympia, which may have been started during the Early Helladic period. Other kurgans are known from Kleidi near Samikos, Koukirikos west of Peristeria, Magira, Chledoni in Elis, Armatova in the valley of upper Peneios all in the northwestern Peloponnese. The most impressive and systematically excavated tumuli in Attica are from Marathon north of Athens and are dated to the Middle Helladic period (excavations by Marinatos: Marinatos 1973).

The beginning of the Bronze Age in Greece is synchronous with the infiltration of the Indo-Europeans. The present dating techniques and typological studies suggest the Early Helladic II period. The routes of incursion can be detected: one from Western Yugoslavia and Albania along the Adriatic coast to Epirus, the western Peloponnese and Attica; another from the North Aegean and Macedonia to Thessaly and Boeotia. The destruction of Lerna in the eastern Peloponnese at the end of the Early Helladic II period marks the end of the Old European urban civilization on the mainland.

Conclusions

From 5500 to 3500 BC copper metallurgy is evidenced Old Europe, in the Starčevo and Vinča, Butmir, Lengyel, Tisza, Tiszapolgár, East Balkan, and Cucuteni (Tripolye) civilizations. It was a copper and not a bronze metallurgy.

Deliberate alloys of arsenic and tin occurred in Transcaucasia during the 5th millennium BC; this new technique was transmitted to Europe by the 'Kurgan' (Indo-European) people at the end of the 4th millennium BC. Thus the bronze metallurgy was not an outgrowth of Old European experiences in metallurgical skills.

Vehicles (documented by clay copies of four-wheeled carts) and bones of domesticated horses appeared more or less simultaneously with weapons and other diagnostic cultural elements of the 'Kurgan' culture, notably shaft-graves including traces of mortuary houses with the warrior grave equipment of the ruling caste, citadels, and a typically Indo-European set of religious symbols and images of divinities. The extraordinary mobility and armament with frightening weapons of these new peoples in Europe changed the course of European prehistory and accelerated the progress in metallurgy and trade.

From the Kurgan II period there are only a few bronze artifacts documented north of the Caucasus Mountains and the Black Sea. During the Kurgan III period (3500 BC-beginning of the 3rd millennium BC), metallurgical activities are evidenced in the North Pontic area and west of the Black Sea. The practice of alloying copper with arsenic and sometimes tin was known in the grasslands and plains of the western Ukraine and Moldavia (the Usatovo group), the Danubian and Marica Plains (the Cernavoda-Ezero-Baden complex), and in Italy (the Remedello, Rinaldone, and Gaudo groups). Subsequently, during the Kurgan IV period in the middle and the second half of the 3rd millennium BC, the knowledge of bronze metallurgy spread over a wide area of Central Europe (the Mondsee, Altheim, Schönfeld, and early Corded Pottery complexes) and Greece (Early Helladic II). The new technique and weapons and tools of ultimately Caucasian origin appeared in Central Europe and Greece not as isolated objects but either in warrior tombs or in hoards of Kurgan character.

Striking similarities of daggers and other cultural elements in the Danube area, Italy, Sardinia, Crete, and the East Mediterranean coast suggest navigation or sea raids carried out by the Indo-European warriors during the course of the first half and the middle of the 3rd millennium B.C.

Only a swift, mobile people could have been so effective in the rapid, widespread appearance of metallurgical knowledge. Neither the Old Europeans nor the Transcaucasians had diffused their metal products much beyond their own territories.

APPENDIX

A. *Series of C14 Dates from Ezero - Early Bronze Age*

Lab. No.	**C14 Date**	**Corrected Date**
Bln-428	2310 b.c.	2950 BC
Bln-427	2415 b.c.	3000 BC
Bln-421	2385 b.c.	2980 BC
Bln-422	2360 b.c.	2970 BC
Bln-423	2490 b.c.	3390 BC
Bln-424	2625 b.c.	3400 BC
Bln-522	2505 b.c.	3380 BC
Bln-526	2185 b.c.	2940 BC
Bln-523	2450 b.c.	3210 BC
Bln-524	2510 b.c.	3380 BC
Bln-525	2330 b.c.	2960 BC
Bln-527	2440 b.c.	3310 BC

(and five more dates indicating the same age)

B. *Series of C14 Dates from Sitagroi Phases IV/V- Early Bronze Age*

Lab No.	**C14 Date**	**Corrected Date**	**Phase**
Bln-773	2440 ± 100 b.c.	3390 BC	IV
Bln-879	2600 ± 100 b.c.	3400 BC	IV
Bln-878	2445 ± 100 b.c.	3380 BC	IV
BM-651	2382 ± 79 b.c.	2980 BC	IV
BM-650a	2413 ± 56 b.c.	3000 BC	IV
Bln-880	2560 ± 100 b.c.	3400 BC	IV
Bln-782	2360 ± 100 b.c.	2970 BC	IV/IVa
BM-653	1840 ± 78 b.c.	2300 BC	Vb
Bln-781	2135 ± 150 b.c	2930 BC	Vb
Bln-780	1920 ± 100 b.c.	2400 BC	Vb
Bln-876	2015 ± 100 b.c.	2700 BC	Vb
Bln-877	2220 ± 100 b.c.	2840 BC	Va
BM-652	1853 ± 59 b.c.	2300 BC	Va

SOURCES OF ILLUSTRATIONS

Fig. 1	Museum Szentes, eastern Hungary. Publ. J. Czalog, Die anthropomorphen Gefässe und Idol plastiken von Szegvár Tűsköves. *Acta Archaeologica* (Budapest), Vol. 11 (1959): 7-38. Photo K. Kónya.
Fig. 2	Balaton Museum in Kesztély, Hungary. Photo K. Könya.
Fig. 3	Archaeological Museum, Sofia, Bulgaria. Publ. by Georgi Georgiev and Nikola Angelov, Razkopki na selištnata mogila do Ruse prez 1950-53 godina. *Izvestija Bulgarska Akad. na Naukite, Arkheological Institute, XXI(1957)*:70.
Fig. 4	G. P. Sergeev 1962. Metal analysis: N. V. Ryndina 1971. Chronology: L. S. Kiejn 1968.
Fig. 5	B. Novotný 1966.
Fig. 6	1, Sibiu Museum, Inv. 292; 2, Nemzeti Muzeum Budapest 35/1939-54; Vienna, Naturhistorisches Museum 37578. Publ. Junghans, Sangmeister, and Schröder 1968.
Figs. 7-10	After Kushnareva-Chubinishvili 1970.
Fig. 11	1-7, Archaeological Institute Kiev. After Lagodovska, Shaposhnikova, Makarevich 1955; 8, Vienna, Archaeological Institute Inv. 26373; 9, Archaeological Museum Plovdiv, Inv. 3223. After Junghans, Sangmeister, and Schröder 1968.
Figs. 12-13	After Kushnareva-Chubinishvili 1970:84.
Fig. 14	After Popova 1963:Pl. 9.
Figs. 15-16	After Passek 1949.
Fig. 17	After Shmaglii 1966: Pl. 1.
Fig. 18	After Berciu 1966.
Fig. 19	After Schmidt 1945: Textbild 11A.
Fig. 20	After Junghans, Sangmeister, and Schröder 1968: 8534 and 6470.
Fig. 21	After Bernabò Brea 1964:Pls. 171-174.
Fig. 22	After Junghans, Sangmeister, and Schröder 1968.
Fig. 23	After Colini 1901.
Fig. 24	After Trump 1966.
Fig. 25	After Branigan 1971.
Fig. 26	After Branigan 1966.
Fig. 27	1) after Dunand 1937-39, 2-4) after Junghans, Sangmeister, and Schröder 1968.
Fig. 28	Finds in the Museum of Neuchâtel, Switzerland. After Anati 1972.
Figs. 29-32	After Anati 1972.
Figs. 33-35	After Dörpfeld 1927 and Hammond 1967.

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An Archaeologist's View of PIE* in 1975*

The author responds to the criticisms advanced by Professor Rüdiger Schmitt concerning the possibility of correlating archaeological and linguistic research relative to the problem of the PIE homeland, and summarizes the archaeological evidence for the PIE identity of the Kurgan Culture.

It is quite obvious that the solution of the PIE origins – on a spatial and temporal basis – is in the hands of archaeologists. Regardless of the extensive linguistic research definite conclusions to the Indo-European homeland problem have not been produced because the matter lies too deep in time.[1] The results of linguistic research of two centuries are, however, a gold mine to archaeologists. Not to use it means a deprivation of a rich source material.

Linguistic research has demonstrated that at a certain time in prehistory the nucleus of a cultural and linguistic stage existed from which the great variety of IE languages and cultures evolved. It has been shown that the specific correspondence between many IE languages is by far too fine a detail to be explained by a polygenetic theory or by intra-language loans (*cf.* Thieme 1954). This "specific correspondence" and "specific stage" exists also in archaeological materials, and it leads to the same conclusion: there was a PIE 'homeland' area. Using archaeological means we are able to trace back in time to a geographical base – a source area – with which more recent developments are tied.

The methods of archaeological reconstruction that make PIE an historical reality are multifaceted and no less painstaking than linguistic ones. These essential prerequisites for reconstruction are: 1) The study of substratum cultures; 2) Tracing cultural continuities back from known historical IE cultures to prehistoric periods; 3) The identification of a certain culture at a specific time and geographical area which is definitely relevant to points 1 and 2; 4) The recognition of specific PIE cultural elements; 5) The recognition of non-IE components in Europe and the Near East; and 6) The attempt to understand the process of hybridization of PIE and substratum elements.

My previous work regarding the 'Kurgan theory' rested not on the equation of PIE as a set of linguistically reconstructed formulae but on studies in time and area: (1) in the field of the Baltic and Slavic speakers (Gimbutas 1946, 1963,

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[1] A detailed critique of the problem is given in the dissertation of James Mallory, *Theory and Method on the Indo-European Homeland Problem,* UCLA 1975.

1971); (2) the Neolithic and Bronze Age of central and western Europe, *i.e.* Old Europe which was non-Indo-European (Gimbutas 1973, 1974a, b). All these studies have strengthened the conviction that a "source culture" existed.

The Kurgan Culture: Name and Chronology

Although nearly twenty years have elapsed since the publication of my thesis in which I connect the PIE problem with the infiltration of the Kurgan people into Europe and the Near East from the Dnieper-Volga steppe, my views have not changed regarding the basic issues. Some revisions are, of course, required with new scientific developments, particularly the elaboration of dating methods. The dates published in 1956 and 1963 for the Kurgan culture and the cultural crisis in Europe were drastically revised in a paper given in 1966 at the Indo-European conference in Philadelphia (Gimbutas 1970).

The fact that chronology was not stable in the early phase of radiocarbon dating made it difficult for linguists and others outside the discipline of archaeology to comprehend. However, to prehistorians, the radiocarbon, or C14, method and its elaboration on the basis of dedrochronology (tree-ring counting based on the long-lived California bristle-cone pine) have been a true blessing no matter how many times they must revise their traditional thinking structured on typological comparisons and previous publications. It is true that the C14 dating method was subject to substantial changes in the past two decades, but it has been stabilized. We are in possession of a considerable number of dates for each archaeological complex, and we rely on their calibration to dendrochronology. The counting of tree rings cannot lead us far off the road (the depth in time is *c.* 5400 BC, and it is hoped that soon an additional 500 years will be added to the time range). Thanks to the new dating methods, not only millennia, but centuries and half centuries, can be discerned within the time frames of the Neolithic and Bronze Age.

The term "Kurgan" is a blanket label for a cultural tradition through time, *i.e., c.* 5000-2000 BC. It covers a number of socio-economic, stylistic, and religious elements which argues for a genetic affinity among the many cultural complexes within this time range. The "Kurgan culture" is not a "single (uniform) cultural entity"; it comprises three millennia, subdivided into four periods: Kurgan I through IV. There is no need to eliminate such labels as Srednij Stog II, Yamna (pit-grave), and Corded-Battle-Axe as they are necessary for the identification of specific archaeological complexes of various phases and areas. Only Kurgan I and II can be equated with a relatively uniform cultural complex. It was after the expansion that new developments, *i.e.* formations of cultural variants, took place.

Before the revolution in chronology caused by radiocarbon dates and their calibration with dendrochronology, the "Kurgan culture" was presumed to have been of a much shorter duration; its span of three millennia had been squeezed into one thousand years or so. Due to the complexity caused by the "lack of stability" in chronology the label "Kurgan" was misused or misunderstood by some scholars. I wish to repeat: it is not a label for the PIE homeland culture, but for cultural features of PIE people during the period which is relevant to the homeland problem.

The three millennia of the "Kurgan tradition" encompass:

Kurgan I – the 5th millennium BC, a period of relative uniformity known from the sites in the Dnieper-Volga steppes east of the Cucuteni (Tripolye) civilization. The archaeological label for this complex is "Srednij Stog II" in the Dnieper and Don basins[2] and the earliest "Yamna" or "Pit-grave" in the lower Volga, lower Ural, and north Caspian region.

Kurgan II – the first half of the 4th millennium BC, the time of the beginning of a crisis west of the Black Sea when Kurgan II graves appear in the area of civilized Old Europe and infiltrate central Europe via the Danube. At this stage Old European civilizations continue their existence.

Kurgan III – the second half of the 4th millennium BC, this phase is marked by a formation of a new culture in the northern part of the Balkan Peninsula and east central Europe (the Cernavoda-Boleraz-Proto-Baden-Baden complex) in central Europe (the Globular Amphora complex) and in Transcaucasia, all bearing Kurgan elements. This period saw the complex process of hybridization or "kurganization" resulting in marked changes in economy, social structure, and religion. The horse and vehicle are evidenced; the former East Balkan tells or hills in strategic positions in the former lands of the Vinča and Lengyel civilizations are converted to strongholds and tribal centers; not a single town or large village of Old European character is known in these areas.

Kurgan IV – the early 3rd millennium, marked by the consolidation of tribal groups dominated by Kurgan elements and the increase of mobility and expansion. This is the time of Corded-Battle-Axe complexes in central and northern Europe, Late "Yamna" and "Catacomb-grave" complexes in the Pontic steppes, the Maikop phase in the northern Caucasus, and the period of destruction of towns in the Aegean and in the east Mediterranean. Northern Europe up to southern Sweden and southern Finland and Greece were "kurganized."

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[2] The name, "Srednij Stog II," came into use for a cultural complex after A.V. Dobrovolskij's excavation of 1927 in the area of the Dnieper rapids. Srednij Stog was a stratified site. Its upper layer (II) covered remains of the non-Indo-European Dnieper-Donets culture (Srednij Stog I: Dobrovolskij 1929; Telegin 1970).

> Indo-European speaking groups of the Bronze and Iron Ages can be traced back in a chain of continuous development to this period: Germanic speakers to the Corded-Battle-Axe complex in northwestern Europe; the Baltic speakers to the East Baltic-central Russian (Fat'janovo) Battle-Axe complex; the Slavic speakers to the north Carpathian Corded-Battle-Axe complex; the Celtic-Italic-Illyrian-Phrygian speakers the to the central European Corded-Battle-Axe complex; the pre-Greeks or earliest Greek speakers to the Albanian-Pelagonian Kurgan group; the Proto-Scythian to the Yamna-Poltavka complex in south Russia.

The whole system of the "Kurgan culture" is not based on a single common feature ("isomorph"), the barrow *(kurgan)*. "Kurgan" is a name for a tradition and like many other names does not refer to one feature but to the sum of elements. Among these: a patriarchal society, a class system, the existence of small tribal units ruled by powerful "chieftains," a predominantly pastoral economy including horse breeding and plant cultivation, architectural features such as small subterranean or above-ground rectangular huts of timber uprights, small villages and massive hillforts, crude unpainted pottery decorated with impressions or stabbing, religious elements indicating a Sky/Sun god and Thunder god, horse sacrifices, and fire cults. The barrow is merely one of the elements. The earthen mounds or stone piles above the shaft graves were in most cases very low, frequently no more than one meter high. During the course of millennia they suffered from destruction in areas of arable land. Thus, the barrow is not even always present. The grave itself was more important than the "cap."

The burial rites are of exceptional value for an insight into the social and religious structure. Burial practices are not loaned to other cultures; nor are they abruptly abandoned even though they are subject to gradual change. Because graves of Kurgan tradition constitute the overwhelming majority of cultural remains, they are a primary source of information. The characteristic features of grave structure and burial customs are as follows: 1) the presence of a mortuary house built of either stone slabs or timber inside the shaft, roofed with timber or stones or by a tent supported by three or four wooden poles or stakes. The floor was covered with mats, bark, ochre, ashes, or pebbles. 2) The grave was covered with a round earthen or stone mound frequently surrounded by a cromlech, *i.e.* a ring of stones or timber uprights. Only royal burials were marked by an unusually high tumulus; others were low. Grave stelae in the shape of a male god crudely hewn of sandstone slabs marked the burial place (some were reused to roof mortuary houses). 3) The central grave in a barrow was intended for the male and secondary graves were given to women, children, and possibly other less important members, male or female, of the family, or clan. 4) The presence of the *suttee* custom, the burial of wife and children and perhaps slaves together with the deceased husband, father, and master. 5) The burial of animals in separate graves. 6) The presence of human and animal sacrifice in connection with the burial of people of the higher class. 7) The evidence of class distinctions in the absence or presence of burial equipment; the majority of graves are empty; the chieftain or warrior graves include flint arrowheads, a flint point, a knife, a battle-axe (of antler in Kurgan I, of stone or copper in Kurgan II-III times), a macehead of stone (in horse-head shape during the Kurgan II period), a pectoral ornament made of perforated teeth of a dog, fox, wolf, or bear, a necklace of boar tusks, and, exceptionally, a copper or electrum ring, copper spiral armrings, and a bone belt clasp; one or several beakers are laid at the head or feet. 8) The dead were inhumed and placed on the floor of the grave in the contracted position: in Kurgan I and II times lying on the back and usually with the head oriented toward the cist, in Kurgan III and IV – on the side (male on the right, female on the left) with a predominant orientation to the west. Cremation rites were not unknown.

The enumerated elements refer to burial rites of the culture north of the Black Sea and in the lower Volga region throughout the period 5000-2000 BC. They apply also to "Kurgan" graves of east central, central, and northern Europe and south of the Caucasus during Kurgan II-IV times, *i.e.* during the expansion and post-expansion periods. They continued with some transformations even up to the historic period throughout the Bronze and Iron Ages. The belief in an afterlife replete with the same earthly social structure is one of the most conservative features of IE societies. Kurgan burial rites can be easily distinguished from those of northern Eurasian, Comb- and Pit-marked Pottery hunting and fishing peoples, and from those of southeast, Mediterranean, and western European agriculturalists. In the latter the motif of regeneration predominated.

Kurgan I and II in the Lower Dnieper–Lower Volga–Ural Steppes and the "Homeland" Area

If the Kurgan tradition is not synonymous with the IE homeland, what then can we expect from archaeology in the solution of the spacial and temporal basis of the PIE?

Our attention should be directed to Kurgan I and II between 5000-3500 BC. Sites of relative uniformity are known between the lower Dnieper basin and the southern Urals (Map/I). "Srednij Stog II" is a label for a western variant of this culture formed under the influence of the substratum in the Dnieper-Donets region (the "Dnieper-Donets" culture of sub-neolithic stage with affinities in Byelo Russia and southern Lithuania) and in the North Pontic coastal belt 'Surskaja' around the Sea of Azov and the Dnieper rapids area and the Crimean-North Caucasian Neolithic culture. The earliest "pure" Kurgan sites should lie in the Volga region and beyond, but the chronology of the eastern sites is not yet firmly established; sites of Kurgan tradition of the 4th millennium BC are known from the Siberian steppes up to the upper Yenisei.

More than 100 localities of this stage are known (Telegin 1973). Of these, several are habitation sites; the rest are graves, flint mines, and isolated finds. The best explored settlement – Dereivka in the district of Kirovograd on the Dnieper at its confluence with R. Omel'nik – occupied about one third of a hectare. Two rectangular and semi-subterranean houses, 6 x 13 meters in size, and several smaller structures, were uncovered within the 2000 square meters excavated. Open hearths, grinding places, and potters' workshops were associated with the houses. At one end of the village, graves of two dogs and another containing a horse skull were found. Scattered throughout the settlement area were broken beakers tempered with crushed shells and shaped with pointed bottoms, animal bones, and *Unio* and *Paludinae* shells. Horse remains constituted 74 percent of all domesticated animals. Next in importance was cattle (21 percent), pig, and sheep. Dereivka and other sites yielded antler cheek-pieces with one or two perforations which are presumed to have been used as horse bridles. It is estimated that a village such as Dereivka maintained 55 horses, 19 cows, 9 pigs, and 17 sheep/goats (these statistics were obtained from analysis of 3,232 bones of domestic animals: Bibikova 1963:130ff). Wild animal bones in Kurgan I and II sites constitute between 7 and 40 percent of the total amount of bones (in most cases between 10 and 25 percent). Forested environment is indicated by the presence of forest fauna: red deer, roe deer, boar, badger, fox, beaver, hare, bear, elk, wolf, marten, and wild donkey. Bones of fresh water fish as well as harpoons and bone fishhooks testify to fishing in nearby rivers and lakes. Some planting was done by the help of antler hoes and the grinding of grain by stone pestles and quern stones – the sole evidence for agricultural practices. No bone or wood handles of sickles in which flint blades would have been set have been discovered. Long flint knives and scrapers predominate in the flint industry. A variety of wood working tools in stone – axes, adzes, and chisels – have been recovered. Local copper sources were exploited for making ornaments – rings, spiral bracelets, and pendants. Weapons are perhaps the most striking remains; formidable antler battle-axes, some 30 cm. long, a multitude of carefully retouched spear points and arrowheads, and maceheads masterfully carved from semi-precious stone, usually porphyry in a dark green hue. The latter were of various shapes, globular, pear-shaped, with three or four globular projections or carved in a horse-head form. Weapons were recovered from male burials and were symbols of status befitting a chieftain or warrior. From the earliest stage of Kurgan tradition, double graves containing a male and a female buried at the same time and burials of domestic animals are known. The graves are in pits built of stone slabs and covered by a heap of flat stones.

The economic and social structure of this complex is unique: it cannot be mistaken with that of the Comb- and Pit-marked Pottery culture in central Russia and the Middle Urals, the Caucasian culture, or with that of the Balkan Peninsula or central and northern Europe. The evidence for horse-breeding and horse saddling is overwhelming. No area in the east, south, west, or north has yielded evidence for the specialization of horse-breeding. A few horse bones, rarely constituting more than 2 percent of the total of domestic animals, are known from several Cucuteni-Tripolye and East Balkan Gumelniţa sites (Telegin 1973:133-134) and from Tiszapolgár cemeteries in eastern Hungary and Moravia (Bökönyi 1974) contemporary with Kurgan II.[3] The evidence points to the hub of horse domestication beginning in Kurgan territory from where it spread to the west.

Basing his work on stratigraphical and typological grounds, Telegin has subdivided the Srednij Stog II complex into two periods, each having two sub-phases of nearly 1000 years in duration. The only radiocarbon date for the settlement of Dereivka (of Kurgan II) is 3565 ± 90 b.c.[4] or *c.* 4730 BC true age and was obtained from the dating of a horse bone analyzed at UCLA (1446 A). The remainder of the chronology rests on radiocarbon dates for the various phases of the Cucuteni-Tripolye civilization with which the Kurgan people came into contact around the middle of the 5th millennium BC.

The chronological scheme is as follows:

KURGAN (Srednij Stog)		**CUCUTENI CIVILIZATION**
	b	Cucuteni *B*
Kurgan II		
	a	Cucuteni-*AB*
	b	Cucuteni *A*
Kurgan I		
	a	Pre-Cucuteni III

The radiocarbon dates for Pre-Cucuteni III and Cucuteni *A*:

Site	**Lab. No.**	**Date Before Present**	**True Age BC**
Tirpeşti	GrN-4424	5540 ± 85	4400
Novye Rusesti I	Bln-590	5565 ± 100	4420
Polivanov Jar	GrN-5134	5440 ± 70	4350
Hăbăşeşti	GrN-1985	5330 ± 80	4300

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[3] Goodenough's citation of Cucutenian (Tripolyan) evidence for the domesticated horse and the PIE homeland in this area (Goodenough 1970), *i.e.* the western Ukraine and Moldavia where the highly sophisticated Cucuteni civilization is found, has no archaeological foundation. Not only the amount of horse bones in Kurgan sites, but also the presence of the wild horse must be taken into consideration. In Bökönyi's opinion: "the earliest and most important domestication of horses may have taken place in the Steppes of Asia and Eastern Europe, for only in this region in the Neolithic large numbers of wild horses which had survived the Pleistocene could be found. An effect that here, too, domestication was started. But in Europe domestication never attained the same significance, since the principal role was always played by horses that had spread there from the east" (Bökönyi 1974:238) The horse bones found in eastern Hungary in a cemetery at Deszk near Szeged, assigned to the Tiszapolgár complex (contemporary with the Cucuteni *AB* stage), were shown by Bökönyi to be of a small steppe type horse and the same as those known from the village of Dereivka (*loc.cit.*:238).

[4] b.c.: Radiocarbon years are not calendrical years and therefore are not capitalized.

The C14 dates for Cucuteni *B*:

Valea Lupului	GrN-1982	4950 ± 60	3700
Evmenka	UCLA-1466B	4790 ± 100	3600
	UCLA-1671B	4890 ± 60	3700
Chapaevka	Bln-631	4870 ± 100	3680

There are no C14 dates for Cucuteni *AB* sites; they must be placed between 4300-3700 BC.

The date for the first appearance of the vehicle has not yet been firmly established, but it may quite possibly be Kurgan II, *i.e.* probably no later than the middle of the 4th millennium BC. A kurgan at Storozhevaja Mogila in the lower Dnieper area may date from the Kurgan II period (Terenozhkin 1951).[5] The contents of this Kurgan II burial included a shaft grave housing a male skeleton lying on its back with contracted legs above which wooden parts of a two-wheeled cart piled beneath a tent. The Storozhevaja Mogila grave structure has almost exact parallels in the earliest Kurgan graves in the district of Bekes of northeastern Hungary (Ecsedy 1971). This fact indirectly speaks for the possible presence of vehicles in east central Europe at this early date. It must not be forgotten that wooden carts or their parts are preserved only in rare cases.

There is no need to go further back in time than 5000 BC even though the Mesolithic and Upper Palaeolithic cultural complex of the Black Sea and north of the Caucasus mountains was quite uniform in regard to its flint blade tools. We know from linguistic research that the hypothetical PIE does not reflect the pre-agricultural or early agricultural stage, but a more advanced Chalcolithic stage. The phenomenon of horse domestication and riding and the acquisition of wheels is the fundamental element in the PIE entity. It is too simplistic to assume that by going deeper into the past we may reach an ideal model of the IE homeland. There are no means other than ethnographical parallels to check if an allegedly uniform culture of hunters and fishers in a geographic area such as the North Pontic region could have comprised a single undifferentiated language. It is logical to assume that the Mesolithic or Upper Palaeolithic hunters and fishers lived in isolated groups and spoke a great many more dialects or languages than a people whose culture was marked by an incessantly growing mobility (horses and vehicle) and trade (flint, copper, and, from the mid-4th millennium BC, arsenic bronze). I assume that a linguistic consolidation occurred during the period immediately preceding the outburst into neighboring regions.

My sentence published in 1970: "results achieved by archaeological research make it possible to visualize the homelands at a certain time and place as a historical reality" (Gimbutas 1970:155 [p. 75 this volume]) refers to this specific stage, the *Chalcolithic* in the area of the east Ukrainian-south Russian steppe. I visualize that the PIE nucleus was in this area at this specific period and was in a process of mobilization and consolidation that led to a population explosion. It was not a homeland of millennia, but a unique geographical base supporting a feudal social structure with a newly acquired superiority in mobility and armaments.

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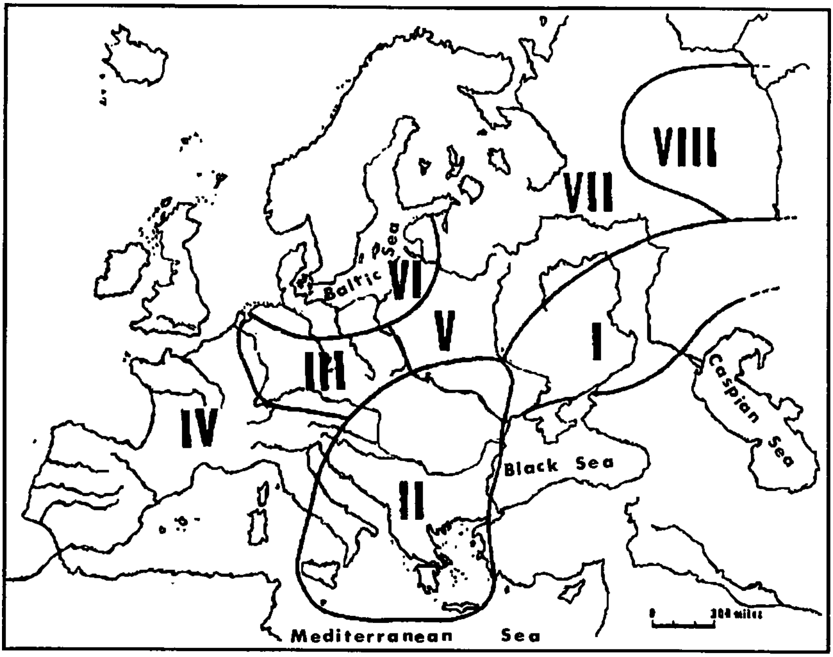
[5] The kurgan called Storozhevaja Mogila, including the wooden parts of a cart piled above the grave and covered with a tent, originally was assumed to be of Scythian age (Terenozhkin 1951). It was identified as Kurgan by this author in 1956 and was republished with an illustration in 1970.

The Substrata

Archaeologists should not overlook linguistic evidence which is relevant to the problem of the non-IE substrata. A number of studies should be taken into consideration. For instance, etymologists and onomatologists of the Greek language have shown there are a number of cultural terms which have no IE etymology. Among them especially are terms for floral and faunal objects native to the Mediterranean, as well as seafaring, architectural and political designations and the names of deities (*cf.* Krahe 1949:18-25). The innovations in Hittite, such as the loss of grammatical gender and comparative degrees in adjectives, have been attributed to the influence of the Caucasian linguistic substrate (Gamkrelidze 1970:138-143). Wagner's research points to a Celtic substrate (influences which correspond to a language that would be very much like Berber.) Interesting and probably pertinent to the non-IE substrata are Wagner's and Kylstra's "northern European linguistic panorama" which includes Scots, Gaelic, western Norse, and Lapp (Wagner 1964:225-298; Kylstra 1967:101-121). Pisani's recent paper, "Indo-Germanisch und Europa," (1974) presents a thesis that an essential fall line splits Europe in two. On the western side are all languages that employ a stress to one and the same syllable of the word; to the east of this line (from the Baltic south to the Adriatic) are those languages with accents which freely shift. Since the accent is one of the most conservative aspects of a language, this fact may be related to the presence of the non-IE substrata such as the western European Neolithic bloc. Hans Kuhn has brought forward the fact that many of the European river names have the phonetic kernel of -ur-, -ar-, -ir-. These names frequently take suffixes in -s, -k, -n as in Urs, Urk, Burs, Burk. Their greatest concentration is in France, Belgium, Holland, Luxembourg, and northern Germany (Kuhn 1971). If this theory is valid it would be interesting to compare the name distribution to that of the western European Neolithic culture.

The linguist's consideration of archaeological data would increase the possibilities of more meaningful solutions regarding the substrate studies.

The map of Europe during the 5th millennium (Map) shows areas of considerably different cultural backgrounds. To this author only the area marked by *I* can be attributed to PIE. That indicated as *II* is "Old Europe": the earliest civilization of Europe, an integral part of the Old World related to the non-IE Anatolian, East Mediterranean, and Mesopotamian cultures. Its beginning is synonymous with the start of agriculture in the 7th millennium



Map: Cultural blocks in Europe of the 5th millennium BC

Key: I) Kurgan I and II or Srednij Stog II complex assumed to represent PIE "homeland" culture.
II) Old Europe, a branch of the Old World with neolithic beginnings in the 7th millennium BC. This southeastern European block consists of seven variants or civilizations: 1) Aegean; 2) Adriatic; 3) Central Balkan (Butmir, Vinča, Tisza); 4) Middle Danube or Lengyel; 5) East Balkan (Karanovo-Gumelniţa); 6) Transylvanian (Petreşti); and 7) Moldavian-west Ukrainian or Cucuteni (Tripolye).
III) Linear Pottery culture of central Europe, developed through acculturation of hunters and fishers to agriculture. Strongly influenced by and akin to II.
IV) West European Neolithic of "Fossa" in Spain, "Chassey" in France, "Lagozza" in northern Italy, "Cortaillod" in eastern and central Switzerland, "Windmill Hill" in England and Ireland, and "Michelsberg" in the Rhineland.
V) Dnieper-Donets forest culture, its southern distribution truncated by Kurgan infiltration into the lower Dnieper region.
VI) Nemunas-Narva, east Baltic sub-neolithic culture of fishermen akin to Ertebølle in northwestern Europe.
VII) Pit-Marked Pottery culture of food gatherers in forested central Russia.
VIII) East Russian-Middle Ural culture of food gatherers related to VII.

BC. During the 5th millennium, the Old European culture, consisting of a multitude of regional variants, reached a high level of complexity and sophistication. This is observed in each aspect of the cultural remains - architecture (multi-room and two-storey buildings, shrines and temples, painted walls, and furniture), ceramic art (an incredible variety of shapes and designs of polychrome, graphite painted, black-burnished vases and figurines), costume and ornaments (rich female and male ritual attire), metallurgy (copper and gold), craft specialization, etc. In the central Balkan Vinča and Moldavian-west Ukrainian Cucuteni (Tripolye) cultures, large villages grew into townships (for more on Old Europe see Gimbutas 1973). The matriarchal structure of Old European society is highly probable.

The designation *III* is the central European Linear Pottery culture ("Bandkeramik") influenced by and related to central Balkan (Starčevo) and later early Vinča Neolithic culture. It is assumed to have formed through acculturation of local mesolithic hunters-fishers. Its peripheral branches were gradually assimilated by western (Michelsberg and Funnel-necked Beaker) neolithic cultures, by Lengyel (a branch of Old European civilization in the Middle Danube area), and by Boian (an East Balkan group of Old Europe) in its eastern distribution in Romania.

Area *IV* represents the western Neolithic bloc related to north African culture and a recipient of constant cultural stimuli from the east and central Mediterranean. This bloc is least relevant to the PIE problem.

Symbol *V* represents the Dnieper-Donets forest culture, which possessed a knowledge of animal domestication. Its southern branch along the Dnieper and Donets rivers was the first to be assimilated by the Kurgan culture and disappears from the Kurgan II period. Designation *VI* is a northern European Nemunas-Narva culture of fishermen and hunters akin to Ertebølle in Denmark and northwestern Germany. It persisted up to the infiltration of the Corded-Battle-Axe people in the first half of the 3rd millennium BC. The Ertebølle is succeeded by the Funnel-necked Beaker complex which displays features akin to Western European Neolithic (long barrows, megalithic architecture, collective burials). Symbol *VII* is the Pit-marked Pottery culture of hunters and fishers in the forested region of central Russia. Its continuity is traced to the infiltration of the "Fat'janovo"-Battle-Axe people in the first half of the 3rd millennium BC. *VIII* is the East Russian-Middle Ural culture of hunters and fishers, akin to *VII*. The latter is identified with the homeland area of the Finno-Ugric speakers.

Expansion and Hybridization

It was the infiltration of patriarchal, warlike IE speakers who were transported by horses and vehicles into Old Europe that brought about the restructuring of society, economy, and religion: the hybridization of religious motifs, the eclipse of dominant feminine elements in art, and the disintegration of large villages and towns. These changes provide a clue to the understanding of a new period of history in Europe – a change that is relevant not only to the PIE problem but to the origins of Western Civilization.

As yet, the cause of the collapse of the Old European civilization with its innumerable villages and townships, sophisticated painted pottery, variety of architectural traditions, shrines, and gods has not been attributed to natural catastrophes or local economic transformations. There were no earthquakes which disrupted the entire Danubian region. The desiccation of the climate has been demonstrated to have started *c.* 5500-5000 BC, which is one millennium prior to the crisis (*cf.* evidence based on geological studies at Anza, eastern Macedonia: Gimbutas 1974b).

If it is to be understood, the crisis of the 4th millennium BC requires the concerted research of archaeologists, geologists, botanists, palaeozoologists, physical anthropologists on a pan-European scale. One cannot mechanically apply "models of culture change" to Old Europe; these constructs do not incorporate linguistic and mythological evidence. In spite of the complexity involved in research toward the reconstruction of cultural processes of this millennium, one outstanding and tangible fact – the presence of Kurgan graves west of the Dnieper in Moldavia, Dobruja, the Danube valley in Romania, Bulgaria and Yugoslavia, Transylvania, and northeastern Hungary – is a striking argument for the infiltration of the people from the east. Excavators of these alien graves in the former territory of the Cucuteni, Gumelniţa-Salcuţa, Petreşti, and Vinča civilizations regard them as "Kurgan" (Csalog 1954; Kalicz 1967; Gazdapusztai 1965, 1967; Kutzián 1963; Ecsedy 1972, 1973; Garašanin 1961; Dumitrescu 1963; Berciu 1954, 1964; Dinu 1968; Morintz and Roman 1968; Necrasov and Critescu 1965). In the most minute detail these graves resemble those of the lower Dnieper, lower Don, or lower Volga regions (preparation of shafts, hut or tent construction, grave floor cover of mats, bast or ashes, use of ochre, and the posture of the dead, *i.e.* lying on the back with contracted legs). Such total resemblance cannot be accidental. Furthermore, the grave equipment in male graves – flint spear-heads and arrowheads, antler or copper battle-axes and scepter heads – indicates a warrior consciousness not previously known to Old Europe. Of special interest are the horse heads of diorite or serpentine found in graves in Fedeleşeni in Moldavia, Casimcea in Dobruja, Salcuţa in western Romania near the Danube, and in Šuplevec near Bitola in Pelagonia (Popescu 1937-40; Berciu 1954; Dumitrescu 1962; Gimbutas 1970). These are the earliest objects testifying to the presence of Kurgan horsemen in the territories of the Cucuteni, East Balkan (Gumelniţa), and central Balkan Vinča civilizations. On typological grounds, these graves should be placed in the middle or the second half of the 5th millennium BC and are contemporary with the later phase of the Srednij Stog II complex. The scepters in the shape of horse heads are the earliest pictorial representations of bridled horses and have close analogies in the Kuybyshev area of the lower Volga region and in the Elista district in the north Caucasian steppe (Sinitsyn and Erdniev 1966).

The horse, the spear, bow and arrow, and the battle-axe are the symbols of a formidable power to which the free spirit of the civilized matriarchal world must have succumbed. However, in southern Greece and the Aegean islands – Crete, Thera, Melos – the Old European civilization persisted for three more millennia. In the rest of the Balkan Peninsula and in central Europe, the hybridization of the matriarchal and patriarchal worlds began.

The superposition of a single component over many divergent ones must have led to the eventual formation of new cultural units which in historic times are known as Indo-European speaking groups. Such, for instance, was the Indo-European speaking Mycenaean culture in Greece of the 2nd millennium BC composed of Old European-Minoan and Kurgan components. During the 4th and 3rd millennia BC, Europe and the Near East witnessed a complex process of hybridization of non-Indo-European and Indo-European cultures. This process, essentially social, is extremely difficult for archaeologists to interpret. The lack of dialogue between archaeologists who consider the evidence produced by linguists, mythologists and ethnologists and those who disregard it will, unfortunately, generate debates as to Kurgan traditions being Indo-European in origin. Future research must be directed to the study of the effect of non-IE substrata through time to the study of social structure and religion. The rest will depend on how successfully linguists and mythologists apply archaeological evidence.

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The First Wave of Eurasian Steppe Pastoralists into Copper Age Europe*

This is a summary presentation based on archaeological materials of the first incursion of Eurasian steppe pastoralists into Europe in the second half of the 5th millennium BC, and the ensuing economic, social, and ideological transformation of the local European cultures. The reconstruction of this change is essential to the understanding of the complex process of "Kurganization" (Indo-Europeanization) of central Europe.

Introduction

Thanks to the growing number of radiocarbon dates, it is now possible to trace several migratory waves of steppe pastoralists or "Kurgan" people that swept across prehistoric Europe. These repeated incursions and ensuing culture shocks and population shifts were concentrated in three major thrusts:

Wave #1, at *c.* 4400-4300 BC;
Wave #2, mid-4th millennium BC; and
Wave #3, *c.* 3000-2800 BC.
(dates are calibrated to dendrochronology.)

Information essential to the Proto-Indo-European (PIE) problem is provided by Wave #1, for it contains the first traces of warlike horse people from the east. The decisive changes in social structure, residence patterns, economy, art, and religion which they set into motion in the 5th millennium BC have heretofore been attributed to later migrations. The failure to recognize the cultural impact of the two earlier waves wasn't intentional on the part of researchers, who, to the present, have concentrated on Wave #3. It simply wasn't possible to identify the three phases of Kurgan intrusion until scientific technology developed the means to more accurately date prehistoric materials.[1]

The Kurgan cultural chronology cannot be scientifically ascertained for the initial dispersion period due to the lack of radiocarbon dates and the absence of permanent stratified settlements in the Volga and Ural steppe. It is possible,

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*This article was first published in 1977 in *JIES* 5(4):277-338. It incorporates numerous changes made by Marija Gimbutas.

[1] In the author's work of 1956 and 1963, the Kurgan infiltration of Europe was perceived as one movement instead of three. The chronology was revised in 1966 (Gimbutas 1970).

however, to document the Kurgan thrust into Old Europe where we see the confrontation and coexistence of two totally disparate culture systems. This holds true particularly for the Cucuteni (Tripolye) civilizations whose chronology is well established by radiocarbon dates calibrated to dendrochronology (Table 1).

Terminology

The term *Kurgan* is a blanket name for all Eurasian steppe people who infiltrated various regions of Europe at different intervals of the Copper Age. The Kurgan intrusions were on a pan-European scale, but each movement of steppe people or new cultural complex containing Kurgan elements is broken down into circumscribed geographical units and labeled accordingly.

The chronological classification into Kurgan I-IV does not mean that all four represent an evolution of one Kurgan group. On the contrary, it now seems that only Kurgan I and II are linked together. Kurgan III and IV are different groups of the same tradition.

Pontic Steppe	**West of the Black Sea and Danubian Basin**
Wave #1	
Kurgan I: Early Yamna in the lower Volga Basin. Early Srednij Stog: first settlement in the lower Dnieper region; amalgamation with the Dnieper-Donets culture.	*c.* 4400-4300 BC Cucuteni A_{2-3} (Moldavia) Karanono VI (Bulgaria)
Kurgan II: Late Srednij Stog	
Wave #2	
Kurgan III: Mikhajlovka I – Usatovo Complex ("Gorodsk" in the W. Ukraine, " Folteşti" in Moldavia)	*c.* 3400-3200 BC
Wave #3	
Kurgan IV: Late Yamna	*c.* 3000-2900 BC

Table 1: Chronology of the Kurgan complexes in the Pontic Steppe and of the three waves west of the Black Sea and the Danubian basin.

"Kurgan tradition" is defined as collective socio-economic and ideological features observable over time and space. This tradition – characterized by a pastoral economy, an agnatically-linked, hierarchal social structure, seasonal settlements, small semi-subterranean dwellings and larger chieftain's houses, diagnostic burial rites including human and animal sacrifices and symbolic systems with the sun as the dominant motif – can be traced through the millennia to each geographical region that the Kurgan people settled or each local population which they "kurganized."

As a blanket name, *Kurgan* represents the following cultural complexes in the north Pontic area:

Srednij Stog II – in the lower Dnieper-lower Don region, *c.* 4400-3400 BC;[2] (Table 1: Kurgan I and II). An intrusive group from the lower Volga area.

Usatovo-Mikhajlovka – *c.* 3500-2900 BC, north of the Black Sea. (Table 1: Kurgan III)

Early Yamna (Drevnejamna) – a general term used for Kurgans in the Volga as well as the Dnieper steppe. In the lower Volga-Ural area, the beginning may be *c.* 5000 BC.

Late Yamna – a label for Kurgans of the 3rd millennium BC between the lower Dniester and lower Volga (Table 1: Kurgan IV).

Catacomb-grave – a term for a specific interment in oven shaped tombs which occurs in the second half of the 3rd millennium around the Sea of Azov while Yamma graves continue elsewhere.

Ochre-grave – a general term used on a par with Kurgan and applied for: 1) the earliest Kurgan graves west of the Black Sea (Wave #1), contemporary with the Srednij Stog complex; and 2) the Yamma graves of Wave #3, dated to the beginning of the 3rd millennium BC. Since ochre is relatively universal in Kurgan and non-Kurgan graves, this term is not the best choice.

We speak of "waves" and "repercussions" and do not apply the "Kurgan" label to cultural complexes of the Danubian basin and northern Europe formed after the arrival of Kurgan people. There was no transplantation of the Eurasian steppe culture west of the Black Sea *in toto*; the process was more complex, involving the coexistence of different cultural traditions, dislocations of populations, subjugations by a warrior nobility, and cultural amalgamations.

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[2] Some scholars reject the label Kurgan ("barrow") on the premise that the graves of Kurgan I-II or "Srednij Stog" in the lower Dnieper basin are 'flat' (lacking earthen mounds above the grave pit). This deserves explanation: Kurgan I graves are stone cairns, originally covered by stones and surrounded by cromlechs. If they are occasionally 'flat', it must be due to their destruction. Kurgan III and IV graves are covered by earthen barrows. Kurgan II graves are primarily reported as being flat: a result of their amalgamation with the local Dnieper-Donets population?

The Upheaval in Old Europe: The Emergence of Horse-Riding Warriors

Old Europe is the well-developed civilization of southeast Europe which lasted three millennia, *c.* 6500 BC to 3500 BC. Its Chalcolithic and Copper Age stages belong mainly to the 5th millennium BC (Table 2). At *c.* 4400-4300 BC in the Danubian basin and at *c.* 3500 BC in the western Ukraine and Moldavia, the millennial traditions were truncated: towns and villages disintergrated, magnificent painted pottery vanished; as did shrines, frescoes, sculptures, symbols, and script. The taste for beauty and the sophistication of style and execution withered. The use of vivid colors disappeared in nearly all Old European territories except Greece, the Cyclades, and Crete where Old European traditions continued for three more millennia, to *c.* 1500 BC.

The dramatic upheaval of Old Europe is evidenced in the archaeological record. The abrupt cessation of painted pottery and figurines, disintegration of egalitarian townships, and termination of symbols and linear signs is concomitant with the sudden appearance of weapons and horses.

The Old European and Kurgan cultures were the antithesis of one another. The Old Europeans were sedentary horticulturalists prone to living in large well-planned townships. The absence of fortifications and weapons attests to the peaceful coexistence of this egalitarian civilization that was matrilinear and matrilocal. The Kurgan system was composed of patrilineal, socially stratified herding units which lived in small villages or seasonal settlements while grazing their animals over vast areas. One ecomony based on farming, the other on stock breeding and grazing, produced two contrasting ideologies. The Old European belief system focused on the agricultural cycle of birth, death, and regeneration, embodied in the feminine principle, a Mother Creatrix. The Kurgan ideology, as known from comparative Indo-European mythology, exalted virile, heroic warrior gods of the shining and thunderous sky. Weapons are nonexistent in Old European imagery, whereas the dagger and battle-axe are dominant symbols of the Kurgans, who, like all historically known Indo-Europeans, glorified the lethal power of the sharp blade (Table 3).

The domesticated horse, it seems, was the prime cause, as well as the means, for the Kurgans to emerge from the wooded steppe north of the Caspian and Black Seas. Evidence for the horse as a riding animal is documented by antler cheek pieces and replicas of bridal equipment on horse sculptures in the Volga and Dnieper steppes from the second half of the 5th millennium BC. Horse bones are found in sites of the Srednij Stog complex (Kurgan I-II) of the lower Dnieper region, *c.* 4400-3400 BC. Systematic excavations of Srednij Stog type villages, such as Dereivka in the lower Dnieper basin, have uncovered up to fifty-five horses for a settlement of three dwellings.

The domestication of the horse seems to have prompted a disequilibrium between the supply of grazing land in the south Russian steppe and the dietary demand of rapidly increasing herds. Small semi-sedentary Kurgan groups could easily have moved their herds west of the Black Sea where ideal pasturage was

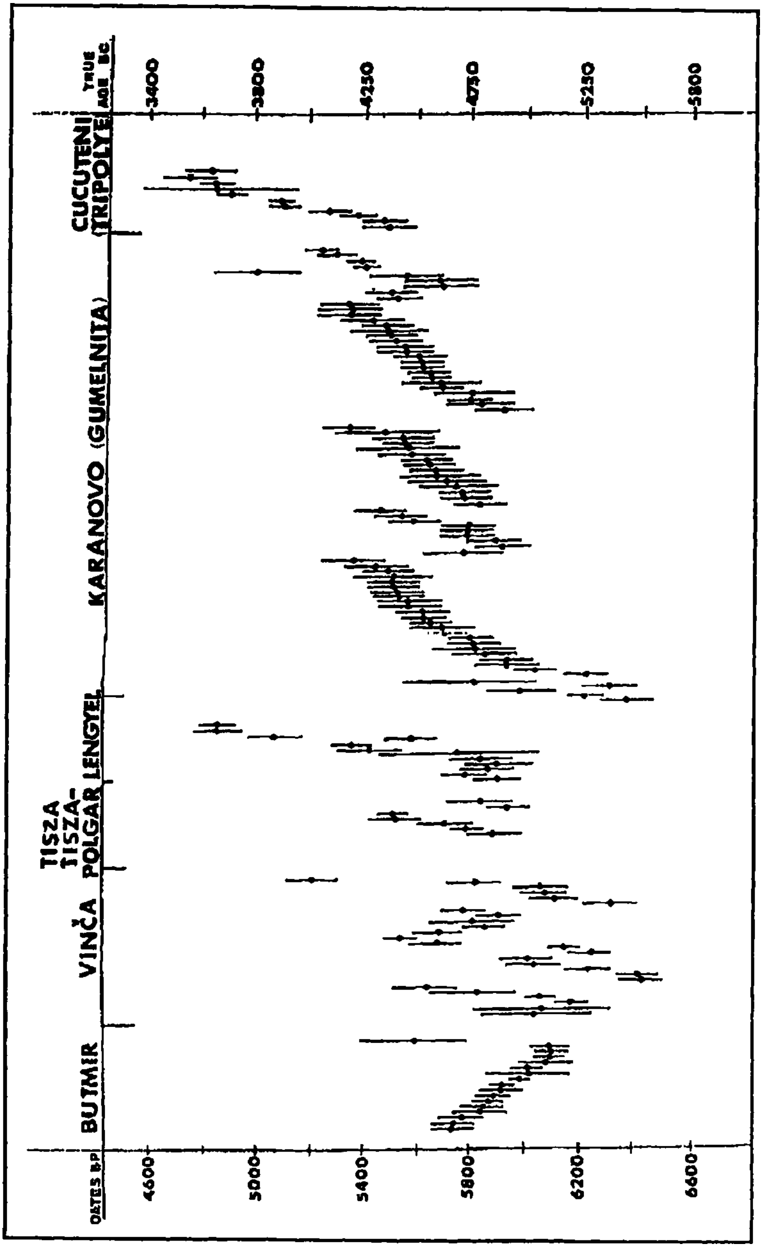
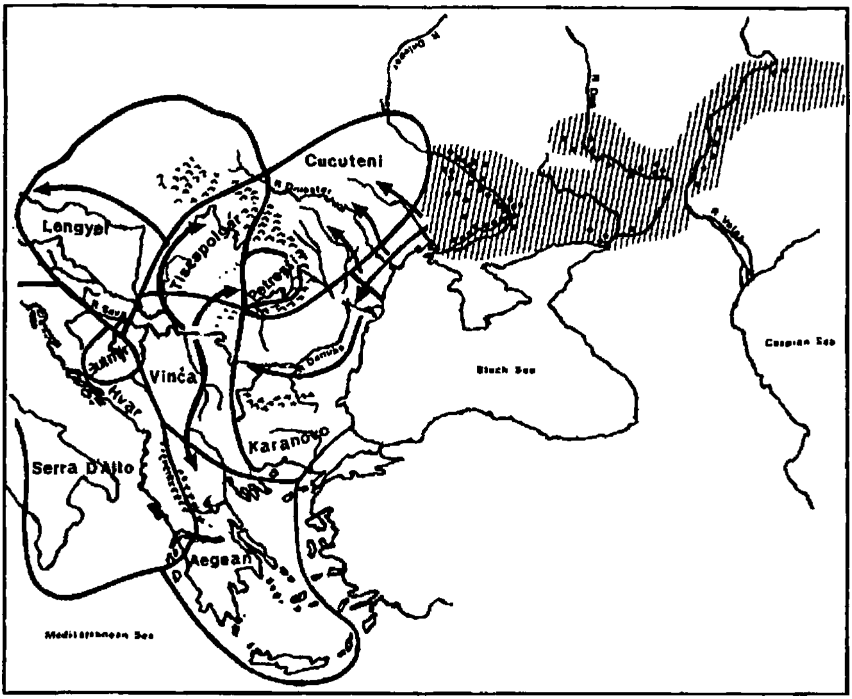


Table 2: Chronology based on radiocarbon dates from major sites of Old Europe (Chalcolithic and Copper Age). True Age is based on the calibration from tree-ring chronology.

	OLD EUROPEAN CULTURE	KU CU
ECONOMY	AGRICULTURAL (WITHOUT THE HORSE), SEDENTARY	PASTORAL (WITH
HABITAT	LARGE AGGREGATES VILLAGES AND TOWNSHIPS	SMALL VILLAGES SEMI-SUBTERRAN
SOCIAL STRUCTURE	EGALITARIAN MATRILINEAR SOCIETY	PATRIARCHAL, PA
IDEOLOGY	PEACEFUL, ART-LOVING WOMAN CREATRESS	WARLIKE MAN CREATOR

Table 3: Two opposite cultural systems, Old European and Kurgan, 5th-4th millennia BC.



Map 1: Kurgan thrust (arrows) into Old Europe at c. 4400-4300 BC. Wave #1 moved from the lower Volga to the lower Dnieper region then infiltrated Cucuteni territory west of the Black Sea. From there it crossed Dobruja, spread across the Danubian plain, and moved south of the Balkan Mountains to the Marica plain and Macedonia. Following the Danube or crossing Transylvania, it reached the east Hungarian grasslands. Striated area and dots: distribution and sites of Kurgan I-II (including Srednij Stog complex north of the Black Sea). Most affected areas: Cucuteni, Karanovo, Vinča, Lengyel, Petreşti, and Tisza civilizations and the upper Danube basin (not shown).

supported by soils with a high lime content. Theoretically, the penetration of zones already under cultivation would have appealed to the Kurgans more than the prospect of cultivating the steppe.

Repercussions of Wave #1 were felt first in the area north of the Sea of Azov and in the Dnieper rapids region. There, the Kurgans replaced and partially assimilated the Dnieper-Donets population of herders and fishers. From this contact, the hybrid "Srednij-Stog" culture evolved (Map 1). The earliest graves and burial equipment of this complex have close parallels in the lower Volga region and Danubian plain. These shared traditions give some idea of the vast territory covered by Wave #1. While some pastoralists settled in the lower Dnieper area, others pushed westward into Romania, Bulgaria, and eastern

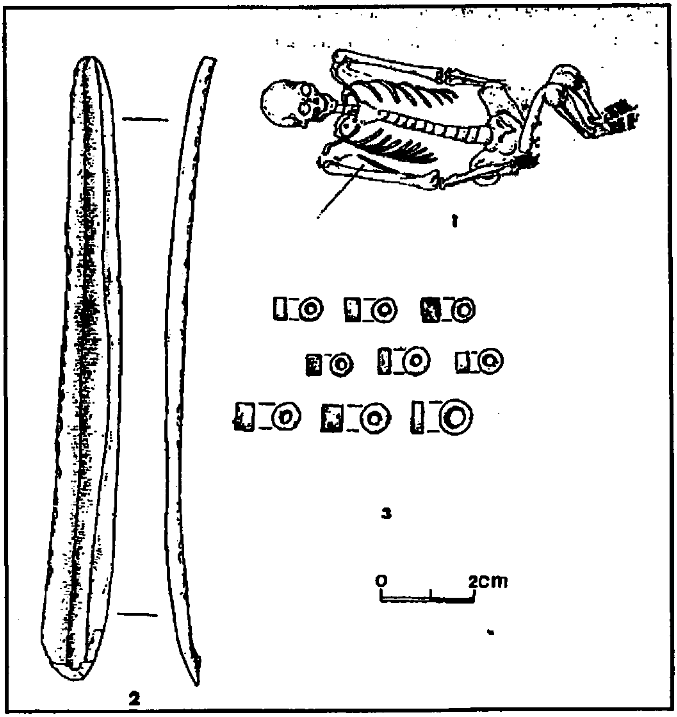


Fig. 1: Kurgan Wave #1 grave from Czongrád, eastern Hungary: 1) tall-statured (182 cm.) robust dolichocranic male in a supine position on a layer of ochre; 2) obsidian blade; 3) copper, *Spondylus* and limestone beads placed at the neck and pelvis. There was also a large ochre knob contained in a pouch of organic matter. (*After* Ecsedy 1972.)

Hungary. The Kurgan penetration of Europe is dated to *c.* 4400-4300 BC on the basis of Kurgan graves and pottery that are synchronous to Cucuteni A_2-A_3 and Karanovo VI ("Gumelniţa") phases.

The Earliest Kurgan Graves in Europe

A definite departure from the simple pit graves of the Old European areas are cairn-marked barrow tombs containing funeral gifts befitting a chieftain or warrior. Whereas the ratio of male/female burials is fairly equal in Old Europe, early Kurgan graves are almost exclusively male (Fig. 1). A warrior consciousness previously unknown in Old Europe is evidenced in equipment recovered from Kurgan graves (Fig. 2): bows and arrows, spears, cutting and thrusting "knives" (proto-daggers), antler-axes, and horse bones. All these constitute the formidable power to which the Old Europeans succumbed.

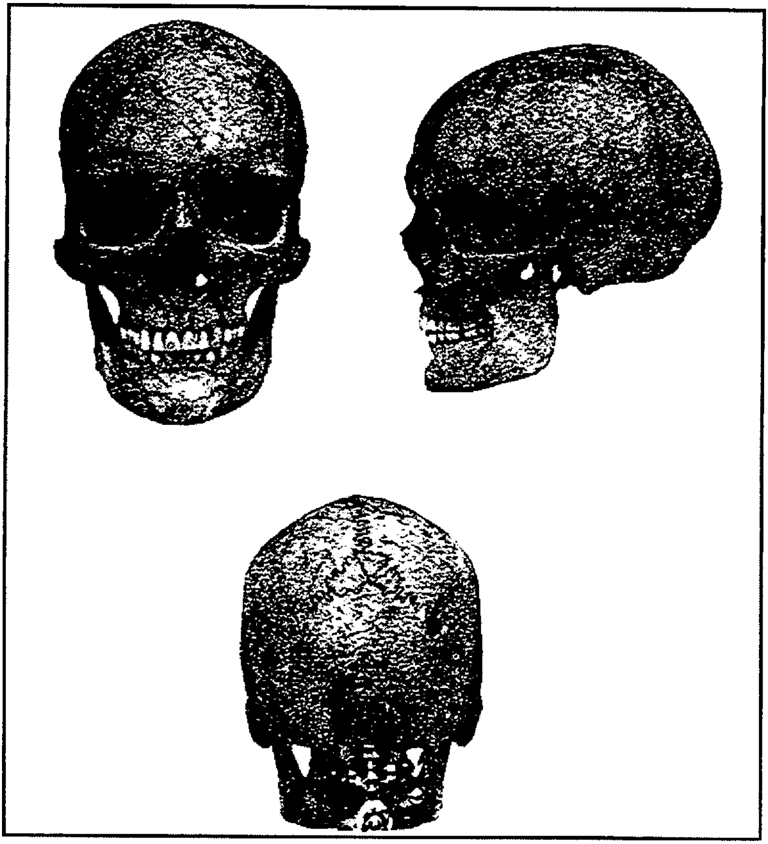


Fig. 2: Skull of the Czongrád male skeleton (see Fig. 2/1) dolichocranic, chamaecranic, and metriocranic with cranial capacity of 1444 cm. (*After* Marcsik 1972.)

Two early Kurgan graves, Casimcea and Suvorovo, in the Danube delta, yielded significant examples of Indo-European ideology: the worship of the horse as a divine animal and *suttee* (Figs. 3-5). Horse-headed stone scepters were recovered from both tombs. In addition to the scepter (Fig. 3/1), the Casimcea man was equipped with five axe-heads, fifteen spear points, and three "knives" (of the type found in Srednij Stog graves). The Suvorovo burial is the first *suttee* grave west of the Black Sea, but it has close parallels in Srednij Stog II sites, Yama and Aleksandrija, in the lower Dnieper area (Telegin 1973:111, fig. 58) (Fig 5; 1/2). The Suvorovo chieftain was buried with a horse-headed porphyry scepter, 17.1 cm. long (Fig. 3/3), flint knives, and a pestle for grinding ochre. Beside him was a female skeleton wearing a necklace of *Unio* shell beads and remnants of a dress covered with mother-of-pearl laminae. The only tool accorded her was a flint scraper. A cromlech, 13 meters in diameter, surrounded the Suvorovo double-grave contained in a central rectangular pit.

[For figure see Fig. 9, p. 58 above.]

Fig. 3: Horse-head scepters of semi-precious stone from northeastern Caucasus and west of the Black Sea: 1) Casimcea, Dobruja, eastern Romania; 2) Terekli-Mekteb, northern Dagestan, northeastern Causasus; 3) Suvorovo on the lower Danube, Moldavian SSR; 4) Fedeleşeni, Moldavia, northeastern Romania; 5) Rzhevo, central Bulgaria; 6) Salcuţa, southwestern Romania. (*After* Danilenko and Shmaglii 1972.)

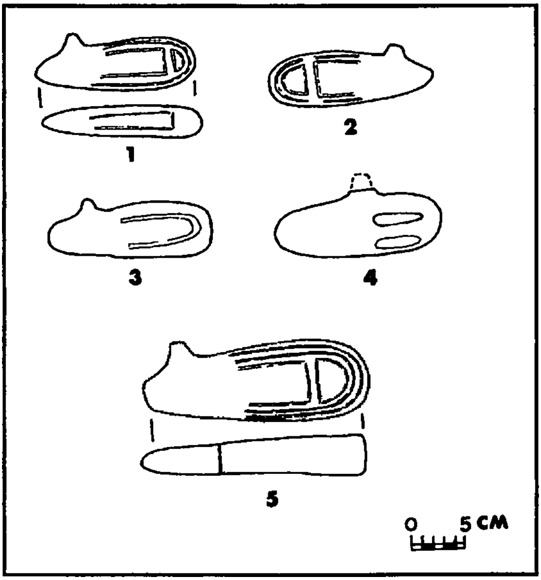


Fig. 4: Schematized bridled horse-head scepters of semi-precious stone from the Volga and north Caucasian steppe, western Ukraine, and Transylvania: 1) area of Kuybyshev, lower Volga; 2) Arkhora near Elista, north Caucasian steppe; 3) Székelyvaja, Transylvania; 4) Berezivka on the southern Bug, western Ukraine; 5) district of Ordzhonikidze, Caucasus. (*After* Danilenko and Shmaglii 1972.)

The Suvorovo and Casimcea scepters are not isolated finds. Six more are known west of the Black Sea and in the Balkan Peninsula: Fedeleşeni and Berezivka in Moldavia, contemporary with Cucuteni *A*; Salcuţa IV, a Karanovo site in southwestern Romania; Székelyvaja in western Transylvania; Rzhevo in central Bulgaria; and Suvodol near Bitola, Macedonia (Fig. 3). Grooves and ridges carved around the nose and top of the head may replicate bridles. The scepters fall into two categories: naturalistic (Fig 3); or totally schematized (Fig. 4). All share striking similarities either to specimens from Kuybyshev on the

Volga (Fig. 4/1), Archora in the north Caucasian steppe (Fig 4/2) or to Terekli-Mekteb in northern Dagestan (Fig. 3/2). The symbolic role of the horse as a divine animal is demonstrated by its image on scepters found only in tombs of important males, presumably chiefs.

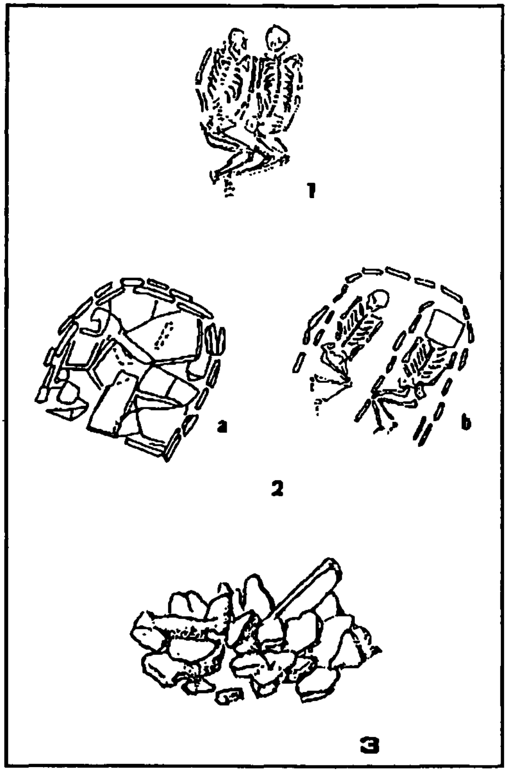


Fig. 5: Male/female graves covered with stone boulders of the Kurgan I-II (Srednij Stog) period: 1) Aleksandrija cemetery; 2) Yama cemetery, lower Dnieper basin. (*After* Telegin 1973.); **3) Cairn from the cemetery of Chapli, district of Dniepropetrovsk. The larger stone (menhir) apparently served as a grave marker** (*After* Dobrovol'skij 1954.)

Antler cheek pieces with a perforated projection in the center appear simultaneously in Cucuteni territory at Novi Ruseshti, Sabatinivka I, Hăbăşeşti, and Berezivka (Fig. 6), north of the Black Sea and in the north Caucasian steppe. Further ties with the east are domesticated horse bones from the Tiszapolgár site of Deszk B near Szeged in southeastern Hungary that are related to a breed, called *tarpan*, native to the Eurasian steppe (Bökönyi 1959, 1974, and 1978).

The earliest evidence of horse sacrifice occurs with the first wave of Kurgan graves northwest and west of the Black Sea. A horse skull was interred in a separate grave beside a Kurgan I burial at Zolotaja Balka in the district of Kherson (Viezzhev 1960). A sacrificial hearth and central grave containing horse and bull heads laid in pairs were found north of the Danube delta in the region of Odessa (Shmaglii and Chernjakov 1970:9, fig. 3).

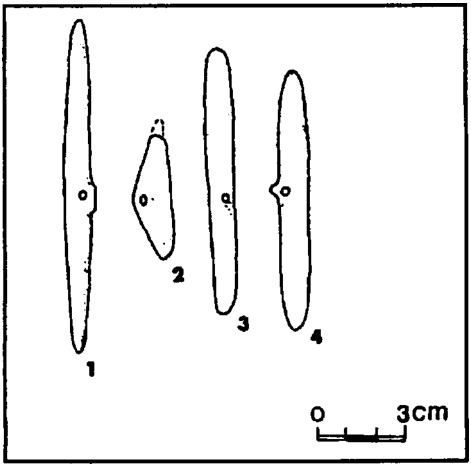


Fig. 6: Antler cheek-piece for horse-bridling from Kurgan sites on the Pontic steppe and territory of the Cucuteni *A* civilization: 1) Hăbăşeşti, Moldavia, northeastern Romania; 2) Berezivka, western Ukraine; 3) Zamok at Kislovodsk, northwestern Caucasus; 4) Novi Ruseshty, Moldavian SSR. (*After* Danilenko and Shmaglii 1972.)

Trade for Luxuries

By virtue of their mobility, steppe people were natural traders. The luxuries they traded were concentrated among a relatively small number of people who formed a privileged ruling class. Active trade relations between the Kurgans and the Old Europeans are represented in the finds from exceptionally rich male Kurgan burials in the Danubian delta, Dobruja, and the lower Dnieper basin.

Male Kurgan burials north and west of the Black Sea typically contained bracelets and neckrings of copper analyzed as ore from the Old European mines of Ai-bunar in central Bulgaria (Figs. 8/4; 9/2-5). In addition to copper, a series of Kurgan graves yielded masses of shell beads, laminae, and pendants, some of which were imported from the Aegean (*Spondylus* and alabaster imitations of *Mastra;* Fig. 8/7).

In addition to copper and shells they nearly always included multi-purpose flint or obsidian dagger-knives (Fig. 10). An obsidian blade of beautiful workmanship found at Czongrád, Hungary, was of Carpathian obsidian (Fig. 1/2). Similar trade objects come from a series of rich Kurgan graves such as Casimcea in Dobruja, Petro-Svistunovo (Figs. 7, 8), and Chapli (Fig. 9) in the lower Dnieper region; and Mariupol on the Sea of Azov. The latter three are considered to be the earliest Kurgan I graves (early Srednij Stog type) in that region. Related finds occured in the bottom layer of the Stril'cha Skela site in the lower Dnieper area (Bodjanskij 1968; Danilenko and Shmaglii 1972). From this, we infer that the earliest Kurgan graves in the Dnieper and north of the Azov region are contemporaneous with those in the western Ukraine, Dobruja, and eastern Hungary.

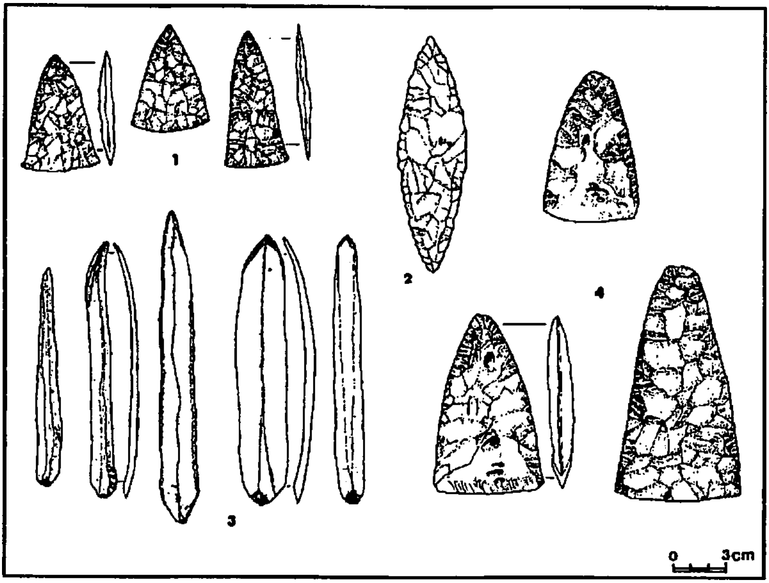


Fig. 7: Kurgan I (early Srednij Stog flint artifacts from Petro-Svistunovo graves, lower Dnieper: 1) spear-points; 2) dagger or halberd blade; 3) sharp pointed blades, possibly used as weapons; 4) celts. (*After* Bodjanskij 1968.)

Coexistence of Kurgans and Cucutenians to *c.* 3500 BC

The Cucutenian civilization survived Kurgan penetrations longer than Old European cultures to the south and the west. Coexistence rather than destruction is implied by Kurgan semi-subterranean "*zemljanki*" (Russian word for semi-subterranean dwelling), and pottery appearing during the Cucuteni *A* and *AB* phases (Fig. 11). Kurgan type potsherds range from one to ten

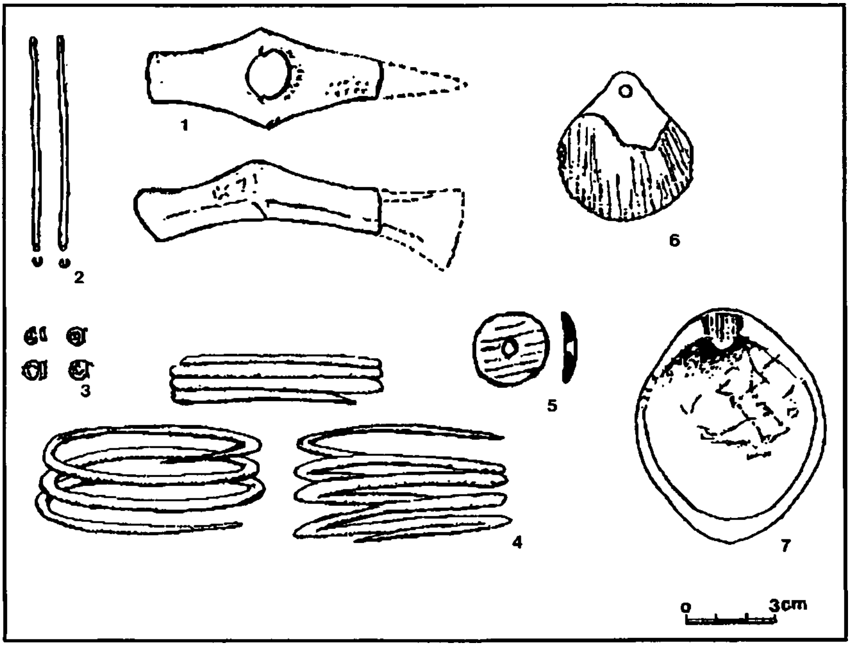


Fig. 8: Kurgan I grave gifts from the cemetery of Petro-Svistunovo, lower Dnieper: 1) copper shaft-hole axe; 2) tube-shaped beads of copper plate; 3) annular beads of copper plate; 4) spiral armrings with narrowing ends; 5) circular pendant of mother-of-pearl of *Unio* shell; 6) pendant of cardium shell; 7) alabaster pendant in imitation of mollusk *Mastra*.

percent of the total recovered from Cucuteni *AB* settlements which show no signs of disruption. The vigor and splendor of the Cucuteni civilization is reflected in its ceramic traditions that continued to its latest phases, Cucuteni $B_{1\text{-}3}$ (Fig. 12).

The appearance of inferior pottery among the technically excellent ceramics of the classical Cucuteni civilization has been noticed by a number of Romanian and Ukrainian archaeologists. This rough, shell-tempered pottery, incised, stabbed and dragged, or impressed by a wound cord, was termed "Cucuteni *C*" to distinguish it from the technologically superior Cucutenian ceramics. Movsha identified it as identical to Srednij Stog type in the lower Dnieper area (Movsha 1961, 1965) (Fig. 13).

It is presumed that the large Cucutenian communities – sometimes containing more than 1000 houses within 300-400 acres – could not be easily overtaken. The development of defensive mechanisms at this time shows an increasing anxiety over intruders (Florescu 1969). Located on naturally protected high areas affording a view of approaching enemies, Cucuteni *A* settlements were defended inland by funnel-shaped trenches (at Cucuteni,

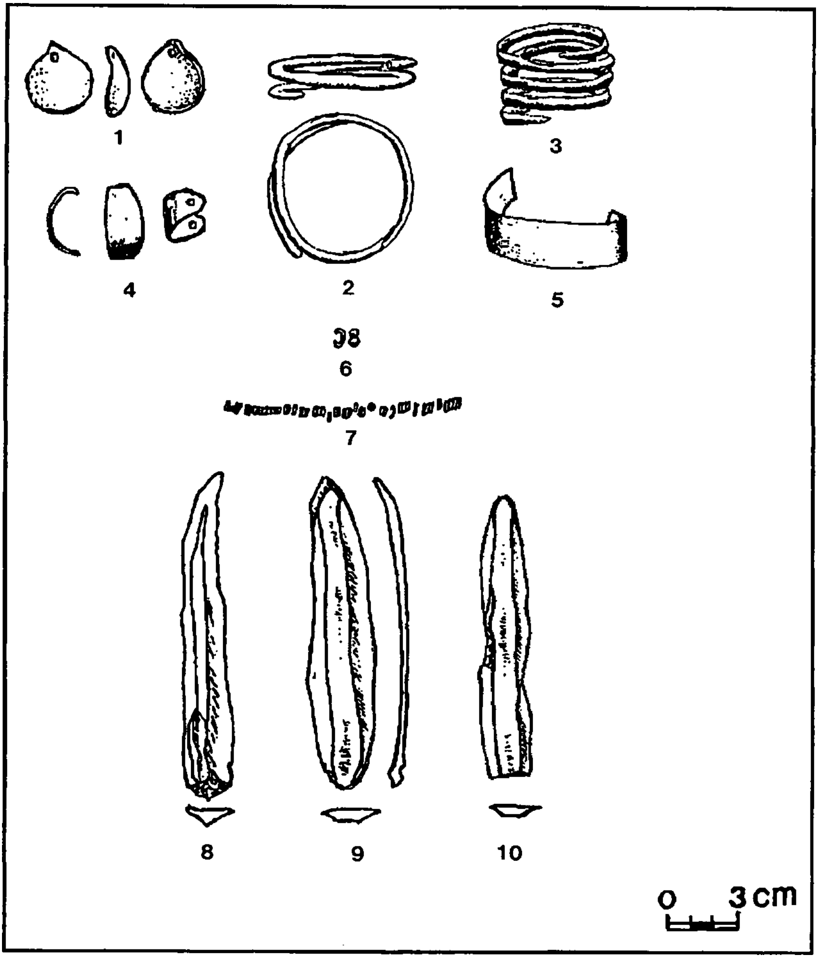


Fig. 9: Burial equipment from the Chapli cemetery: 1-6) copper pendants, bracelets, and beads; 7) shell beads; 8-10) flint daggers. Igren peninsula district of Dniepropetrovsk, lower Dnieper. (*After* Dobrovol'skij 1954.)

Truşeşti, and Hăbăşeşti in Romanian Moldavia). Sites of the *AB* phase are in lower, more open spaces, usually on very wide terraces with deep/wide ditches encircling the settlements. At Traian, the funnel-shaped ditch was 2.5 to 4 meters deep and 4 to 7 meters wide. The threat of renewed Kurgan incursions may be the reason Cucuteni *B* phase settlements resumed locations in naturally protected areas. The defense system of the *B* phase is more elaborate. In some instances, construction of a second rampart at a distance across the river – as at Cucuteni – suggests intensified measures.

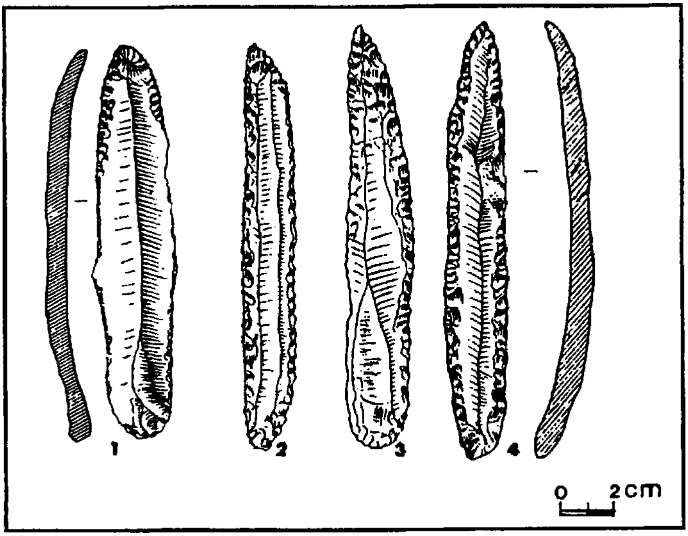


Fig. 10: Thrusting weapons and/or cutting tools from men's graves of the Kurgan I (early Srednij Stog period: 1) Aleksandrija; 2) Stril'cha Skelja; 3) Goncharivka; 4) Buz'ki. (*After* Telegin 1973.)

By means of aerial photography and a magnetometer, Ukrainian archaeologists have identified the boundaries of Cucuteni *B* sites in the district of Uman (Shmaglii, Dudkin, and Zin'kovskij 1973). Communities were planned in ten to twelve concentric elipses cut radially by streets (Fig. 14). The towns extended over two kilometers in length. The dense distribution of sites demonstrates that the Cucutenian population was not exterminated or dislocated (Map 2); its territories were penetrated by relatively small groups of Kurgans and helotized by them for nearly 800 years.[3] There is no evidence for amalgamation of the two groups until the third quarter of the 4th millennium BC.

The Partial Displacement of the Karanovo, Vinča, Butmir, and Lengyel Populations

The situation was quite different for the Karanovo farmers who lived in much smaller, more densely populated, unfortified towns than the Cucutenians (Map 3). The incursion of horse riding warriors was catastrophic for the Karanovo people who were pushed or fled from southern Moldavia, Dobruja, the lower Danube region, and the Marica Valley in Bulgaria.

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[3] The theory that the Kurgan culture originated within the Cucuteni civilization (as outcasts from the agricultural resources to develop the pastoral resources), as some anthropologists have hypothesized, is contrary to archaeological evidence.

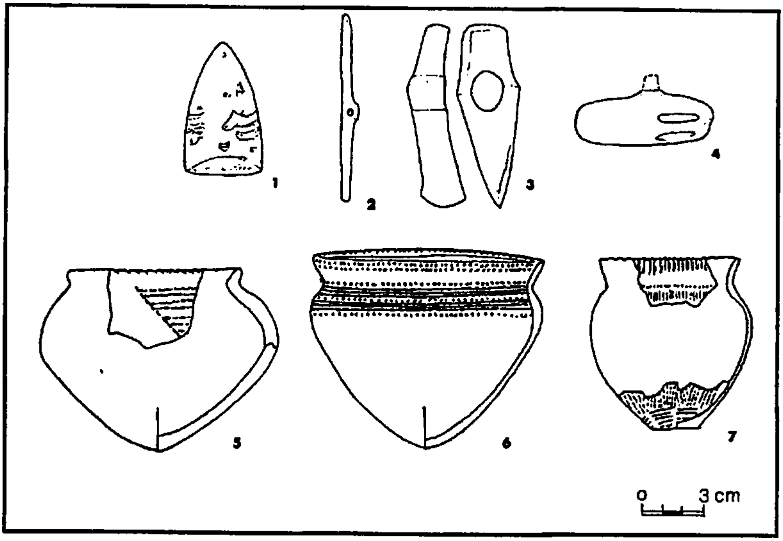

Fig. 11: Diagnostic Kurgan finds in the milieu of the Cucuteni *A* civilization: 1) flint celt; 2) antler cheek-piece; 3) copper axe; 4) schematic horse-head scepter; 5-7) pots tempered with crushed shells and decorated with stabbings and wound cord impressions forming a solar design when viewed from the top. Berezivka on the southern Bug, western Ukraine. (*After* Danilenko and Shmaglii 1972.)

[For figure see Fig. 2/II, III, p. 48 above.]

Fig. 12: Cucuteni *A* (*c.* 4500-4200 BC) and Cucuteni *B* (*c.* 3800-3400 BC) ceramics. Examples from various sites of Moldavia, northeastern Romania.

The Karanovo population of the lower Danube basin fled to the west (Morintz and Roman 1968; Roman 1971). The Salcuţa branch of western Romania settled in caves of the forested slopes of the Transylvanian Alps or on islands of the Danube. Artifacts from cave and island sites indicated that the Karanovo folk continued its sedentary way of life through most of the 4th millennium BC. At the cave Baile Herculane in the Iron Gate region, three phases of occupation were identified by stratigraphy (Roman 1971:47-80). Materials bear relationships to the final phase of the western branch of the Karanovo civilization, called Salcuţa IV (the tell of Salcuţa in the district of Dolj of southwestern Romania has four cultural horizons). Ceramics indicate the continuation of Old European traditions. Fine ware – dishes and handled vases – were slipped and burnished. Decorations were executed by channeling, and red and white paint on a dark brown surface. The finest examples bear the traditional Old European symbolic designs: V's, beaks, chevrons, meanders, nets, checkerboards, bands of diagonal lines, snakes, snake spirals, eggs, and the

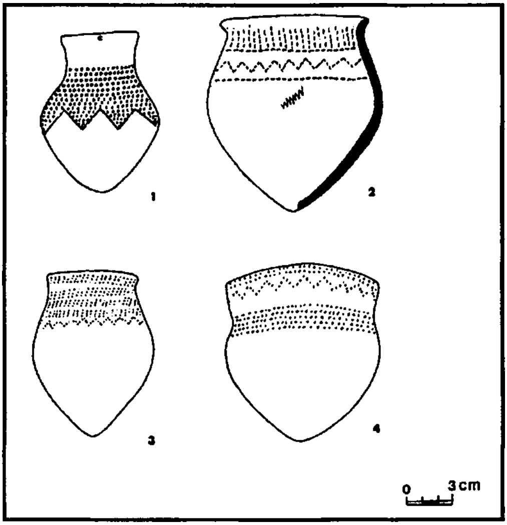

Fig. 13: Kurgan I (early Srednij Stog) pots in the lower Dnieper region, decorated with stabbings forming a solar design when viewed from the top: 1) Domotkan'; 2) Majorka; 3) Chigirin; 4) Khortitsja. (*After* Telegin 1973.)

breast motif enveloped in bands of parallel lines. Many examples illustrate the specific Old European treatment of compartmentalizing symbolic designs and framing with painted bands. Figurines are rare; only a few fragments are recorded from a total of twenty-five analyzed sites in western Romania. The disappearance of cult vases – zoomorphic or anthropomorphic – lamps and miniature sacrificial tables, which occured by the hundreds in the lower Danube tells during earlier phases, suggests that religious worship was subdued and ceremonies were on a much smaller scale. In general, the former vitality and signs of prosperity had vanished. The overall material recovered from the latest Salcuţa and post-Salcuţa periods gives the impression of an impoverished culture.

By the final quarter of the 4th millennium BC, a few pockets of Old European traditions remained in the Danubian region. Such was the so-called "Coţofeni" complex in the Danubian valley of Oltenia, western and northwestern Muntenia, the south of Banat, and Transylvania. The Coţofeni was a non-Kurgan, agricultural, sedentary population living in solidly built houses, using copper tools, and producing Old European-type pottery. Pottery was sometimes painted in white and red and then burnished. *Askoi* (bird-shaped vases) were very frequent and are connected with the Old European worship of the Bird Goddess. Parts of the Coţofeni territory were later taken over by steppe people of Wave #2 (known as the "Glina III" and "Schneckenberg" complex). The Coţofeni culture continued in southern Oltenia. As late as the Bronze Age, Oltenia and Banat were very much Old European in character.

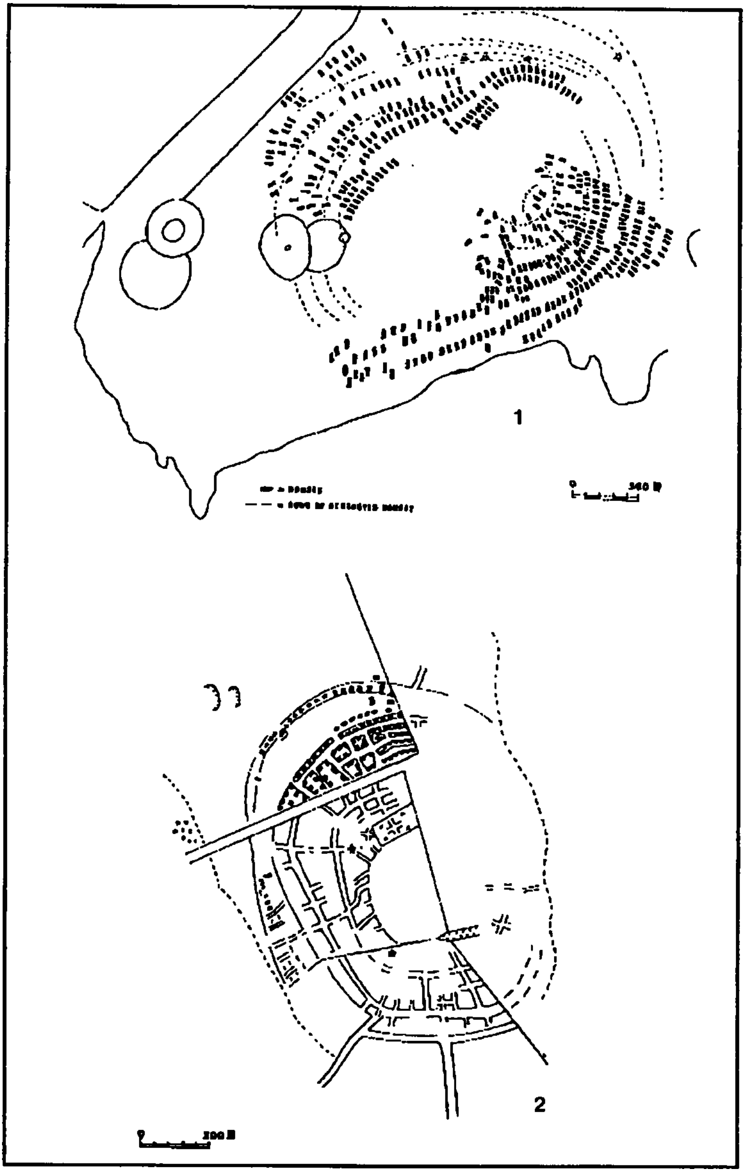

Fig. 14: Towns of Cucuteni (Tripolye) civilization of 1) Majdan and 2) Dobrovodi, region of Uman in the western Ukraine, *c.* 4000-3600 BC. Houses *c.* 30 meters long, scattered over *c.* 300 hectars in 12 concentric rows, were identified by magnometometer and remains of house floors. (*After* Schmaglii, Dudkin, and Zin'kov'kij 1973.)

Calibrated radiocarbon dates from Ostrovul-Corbului and Baile Herculane sites in the Iron Gate region of Romania suggest the period between 3400 and 3000 BC (Table 4).

Site	Lab. No.	C-14 BP	True Age BC[4]
Ostrovul-Corbului	LJ-3797	4570 ± 60	3300-3100
	LJ-3798	4420 ± 50	3290-2925
	LJ-3799	4400 ± 60	3250-2925
Baile-Herculane	LJ-3533	4470 ± 50	*c.* 3400 or later
	LJ-3534	4360 ± 60	3400-3000
	LJ-3535	4360 ± 60	3400-3000
	LJ-3536	4300 ± 60	*c.* 3200-3100

Table 4: Radiocarbon dates from Coţofeni sites in the Iron Gate region, southwestern Romania.

The dislocation of the Karanovo people created disturbances in Yugoslavia, Hungary, Czechoslovakia, and the upper Danube basin. Sites with analogies to Salcuţa IV are known in the central Morava river basin in central Yugoslavia and Kosovo-Metohija and also in Macedonia. The most important sites in Yugoslavia are the cave of Zlot, Bubanj, Hum near Niš (Garašanin 1973:164-208), and Hissar in southwestern Yugoslavia (Todorović 1963).

The dislocation of the Karanovo population was the first link in a chain reaction of population shifts (Fig. 15):

1) The Vinča people moved into western Hungary (the "Balaton" complex), Croatia, Bosnia, and Slavonia ("Lasinja" groups);[5]

2) the Tiszapolgár population spread into Transylvania;

3) the Petreşti group disappeared between the infiltrations of apparently kurganized Tiszapolgár people from the west; and

4) the Lengyel people migrated along the upper Danube to the west and north into Poland (Fig. 15).

The disintegration process is documented by radiocarbon dates from Keszthely-Fenekpuszta, an early settlement of apparent Vinča refugees in western Hungary:

Lab No.	C-14 BP	True Age BC
BLN-501	4890 ± 80	3900-3520
BLN-500	4780 ± 80	3800-3520

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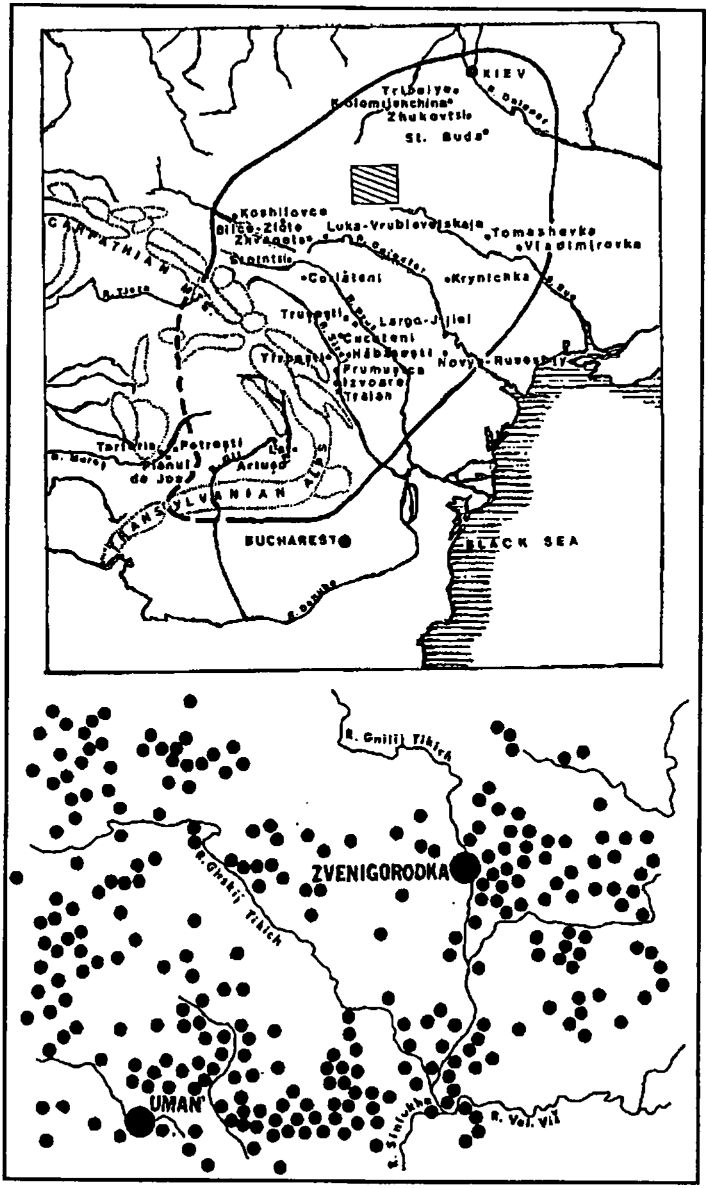
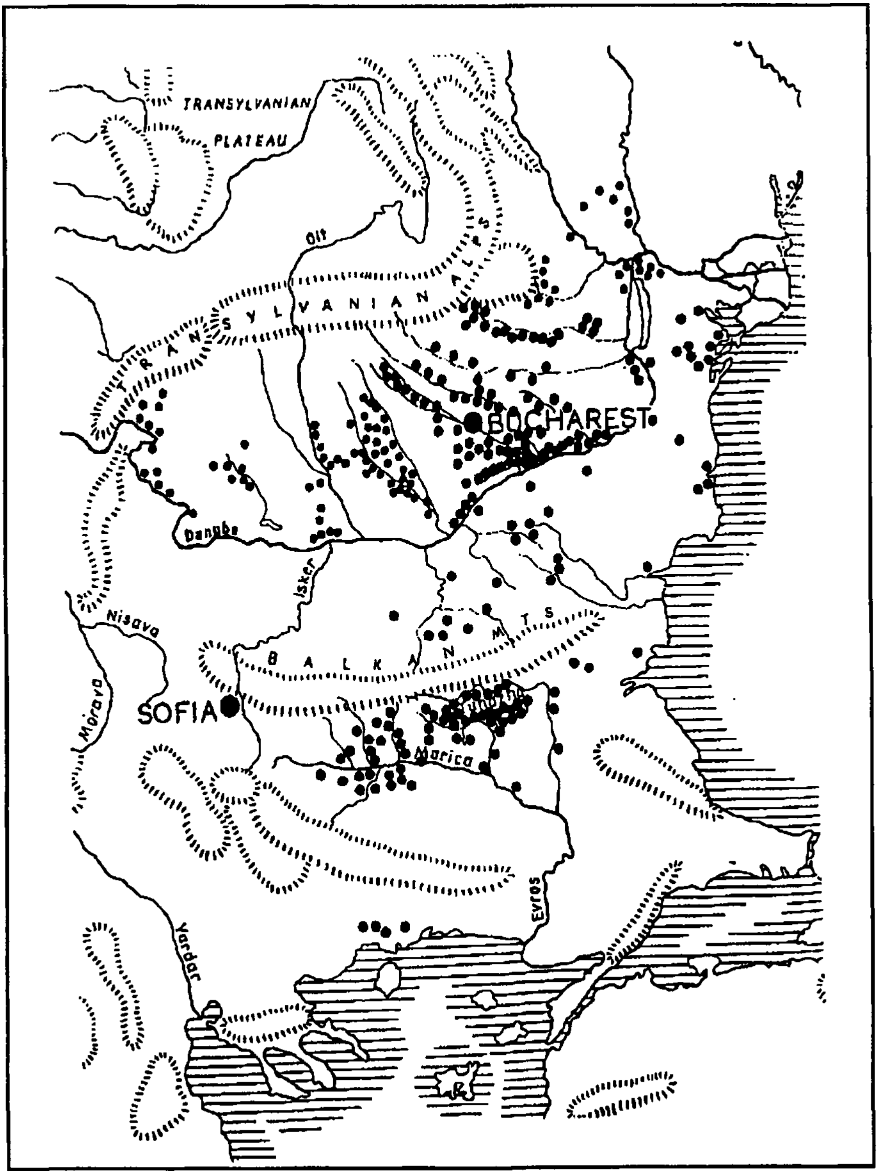
[4] The calibration of all radiocarbon (C-14) dates BP (before present) to True Age has been checked by Dr. Hans E. Suess of the UCSD LJ (La Jolla) laboratory.

[5] The name was given to a Croatian site by Dimitrijević in 1961 and is used for similar complexes in western Hungary and eastern Austria. The term "Balaton I," used by Kalicz, is a synonym for "Lasinja" (Kalicz 1973, 1974).



Map 2: The distribution of the Cucuteni (Tripolye) civilization with the major excavated sites indicated and a sample of density of the settlements in the area of Uman and Zvenigorodka in the western Ukraine, traced by excavations, surface collections, aerial photography, and magnetometer (*After* Shmaglii *et al.* 1973.)



Map 3: The distribution of Karanovo VI settlements in the lower Danube and Marica Plains.

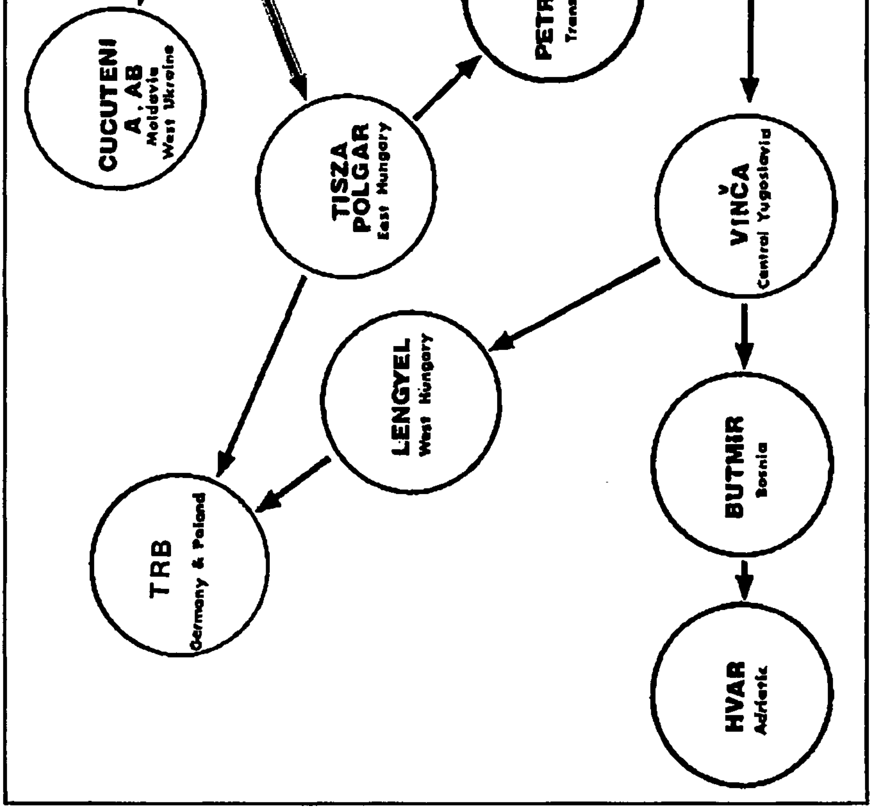


Fig. 15: A scheme of a chain reaction in Old Europe caused by Wave #1. Broad arrows: infiltration of steppe pastoralists. Thin arrows: dislocations, migrations, and influences.

Cernavoda: a new Kurgan-Dominated Cultural Complex in the Danube and Marica Basins

The Cernavoda I complex that emerged in the lower Danube is contemporaneous with Cucuteni *AB* and *B*. It was a mixture of northwestern steppe elements and the Karanovo (Gumelniţa) substratum. It has been determined that Karanovo and Cernavoda are not generically related because none of the tells previously occupied by Karanovo people show traces of cultural continuity with the Cernavoda I culture. Systematically excavated sites – Cernavoda I and Hirşova in Dobruja; Olteniţa-Renie I, Chirnogi, and Ulmeni-Tausanca in the district of Ilfov – were strategically located on high Danube terraces or on spurs (Morintz and Roman 1968). The settlement area covered *c.* 200 by 100 meters (Fig. 16). Houses were semi-subterranean with hearths; there is evidence of timber posts that supported roofs. Decoration was by cord impressions (usually executed by a stick wound with a cord), stabbing and dragging, nail and shell impressions, and rows of knobs ("beaded decorations") forming a solar design around the mouth of the pot. Painted pottery is non-existent. The finest wares are untempered, occasionally brown slipped, and burnished in the Karanovo tradition. Old European symbolic designs and representations of deities or worshippers seem to have vanished with the exception of three schematic figurines from the settlement of Cernavoda I. Deposits contained masses of domesticated animal bones including those of horses. Agriculture is attested by millstones, hoes of deer antler or of cattle bones, and indented flint blades presumed to be sickle teeth. There is no mention of cereal seeds in excavation reports. Other finds were maceheads, perforated hammer-axes or battle axes of deer antler and stone, and large numbers of bone tools, flint scrapers, and knives. A few copper awls and small chisels were present.

Pressures exerted by Kurgan Wave #2 definitively shaped ethnic configurations of Europe. The Cernavoda I people were pushed to the west and south, a portion of its population culture of the north Aegean (Macedonia), east Balkans (Bulgaria), and western Anatolia becomes one, a "Balkano-Danubian" cultural entity bearing Kurgan characteristics. It was the product of Cernavoda I elements that merged with the diluted remnants of Old European groups. This culture is known as "Cernavoda III" in Romania,[6] "Boleráz" in western Slovakia, and "Baden" in the middle Danube basin (the latter is a later phase of "Boleráz"). The formation of this hybrid culture was based on the subjugation of remaining Old European groups and their rapid assimilation into the Kurgan pastoral economy and agnatically-linked, stratified societies. The cultural uniformity over so vast a region is without precedent. It is attributed to the high spatial mobility of herding units, which were probably united by a

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[6] Cernavoda III follows Cernavoda I and has been shown to be genetically related; *i.e.* the carriers of Cernavoda III were heirs of Cernavoda I, whereas Cernavoda II represents Wave #2 in the Danubian delta. The confusion of nomenclature derives from the sequence of discovery.

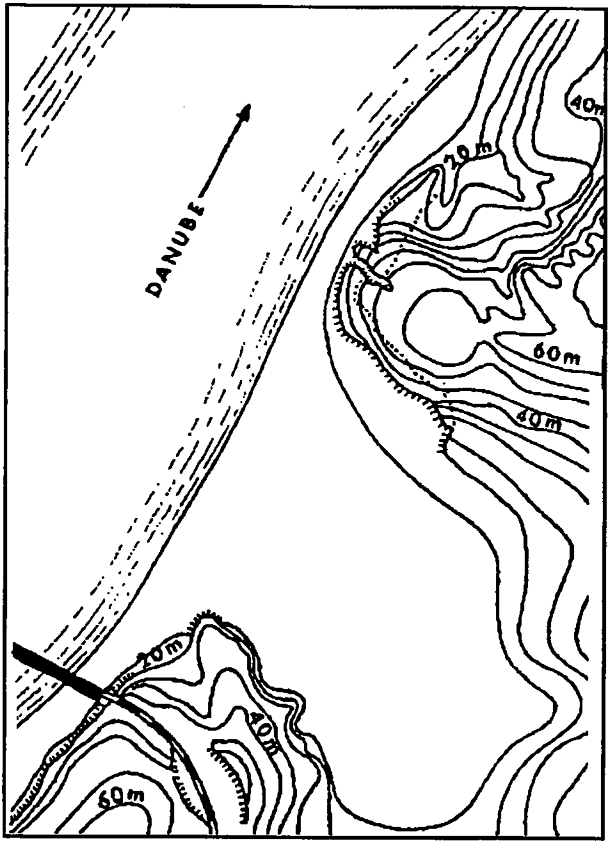

Fig. 16: Cernavoda hilltop site strategically located on a promontory of the Danube. *(After Ştudii şi Cercetări de Istorie Veche* 1973.)

common language. This enabled them to rapidly develop alliances in controlling new territories.

Cernavoda III settlements are found on hilltops. They yield a high amount of domesticated animal bones indicating an economy based on stock breeding. Indirect evidence for agriculture is supplied by quern stones and antler ploughshares. Pottery is strikingly uniform: bag-shaped with flat bases, plastic incised ridges around the mouth or neck, incised or stabbed bands, and herringbone designs on upper sections that apparently symbolize sun rays. The interiors of bowls and dishes are channelled – a decorative technique inherited from Vinča or Karanovo traditions. There is no trace of pottery painting nor of symbolic designs that are purely Old European. Kurgan elements are observed in graves typically covered with a stone cairn, sometimes marked by a stone stele. In addition to *suttee,* human sacrifice is evidenced in graves containing several skulls of children and pits yielding scores of skeletons showing signs of mass immolation. These particular forms of human sacrifice are unknown in Old Europe, but are typical of Kurgan I-II graves in the Pontic and Volga steppe.

A chain of impressive acropolei now appears in the Danubian basin, in the Marica plain north of the Aegean, and in western Turkey. The build-up of these impenetrable tribal centers established the Kurgan domination of Old Europe. Among the outstanding hillforts systematically excavated in recent decades are Ezero in central Bulgaria and Sitagroi in the Drama plain of Greek Macedonia. Both began earlier than Troy I.

The acropolei were protected by massive stone walls. Corridor-shaped gates, as at Ezero, permitted no more than two people to enter at one time. Houses line parallel streets on the hilltops. The largest structure, probably a royal dwelling, contained enormous quantities of grain stored in *pithoi.* Workshops for craftsmen of metal, stone, and pottery are typical of hillforts. The most gifted artisans seem to have been housed on the hill, whereas the working class appear to have lived in small huts below the hillforts. Subsequently, in the first half of the 3rd millennium BC, the hilltop royal houses (*Herrenhäuser* in German) were quite large, 13-15 meters in length with apsidal ends (at Sitagroi: Renfrew 1970; at Ezero: Merpert and Georgiev 1973; at Vučedol: Schmidt 1945).

It is surmised that a considerable mixed population was produced by incoming steppe people and dislocated Old European groups during the 4th millennium BC. This is confirmed by analyses of skeletal materials. The Baden population of the middle Danube basin consisted of several types. For instance, in the area around Budapest, a people of the "Proto-European C" (steppe) type (almost identical to the west Siberian "Andronovo" type) coexisted with a "mixed Mediterranean" type with brachymorphic components. This evidence is based on the analysis of skeletal materials from two cemeteries: Alsonemedi and Budakalász, famous for its small clay effigy of a four-wheeled vehicle (Nemeskéri in Banner 1956).

The chronology for this period – beginning with Cernavoda I and III and ending with the latest phases of hillforts, such as Ezero and Sitagroi – is based on radiocarbon dates in Table 5.

"Kurganization" of Old European Groups of East Hungary and West Transylvania

The excellent pasture land of the east Hungarian-west Transylvanian *puszta* is much like Dobruja. For centuries of early history, it served as the camping ground of horse riding nomads – the Scyths, Huns, and Avars. It is therefore suprising that the flat lush grasslands of eastern Hungary do not appear to have been infiltrated by steppe nomads on a scale comparable to the massive incursions in eastern Romania. Whereas the Old European Karanovo traditions were rapidly replaced by kurganized Cernavoda I elements in Romania, the local populations in east Hungary appear to have been assimilated rather than displaced. This process of amalgamation gave rise to the Tiszapolgár group identified by more than 100 sites (including the later phase, the "Bodrogkeresztúr"). Its continuity is attested by more than 200 burials representing eight to nine generations at the cemetery of Basatanya in the county of Hajdú-Bihar (Nemeskéri in Kutzián 1963). The rarity of Tiszapolgár settlement sites is contrary to the situation before the crisis in Old Europe. Habitation materials are recovered from pits that may be remains of semi-subterranean dwellings; there are no tells or aboveground houses. The diminished size of communities – no larger than thirty to forty individuals – indicates a restructured social system of small herding units. A drastic change in burial practices is evident at major cemeteries: Basatanya, Tiszavalk, Magyarhomorog, Jaszladany, Hajduszoboszlo, Sazsadany, and Mezösas. Hoards or rich grave equipment are restrticted to only a few tombs containing exceptionally tall or robust male skeletons regarded as chieftains (Patay 1968). Their high status is indicated by finds which do not appear in common graves: battle-axes, maceheads, copper arm and finger rings, flint or obsidian knife blades, arrowheads, and special symbolic gifts of boar mandibles and tusks, and dog skeletons. Of the forty-three burials in the cemetery of Tiszavalk, district of Borsod, Grave No. 29 stands out as the richest, deepest, and largest (the grave pit measured 240 cm. in length and 115-120 cm. in width: Patay 1968). A copper battle-axe was placed beside the skull of the tall skeleton lying on its right side in a slightly contracted position. The finger bones of the right hand were bent to clasp the shaft (identical to the chieftain grave of the Magyarhomorog cemetery). The placement of a flint knife, 14 cm. in length, at the skull is analogous to Kurgan graves of Wave #1 (*cf.* Fig. 1/2; Fig. 7/3, 9/8-10; 10). A boar tusk, two copper awls, a flint scraper, and a triangular obsidian flake grouped at the south end of the grave are presumed to have been contained in a leather pouch (analogous to Grave No. 105 of the Basatanya cemetery). A round pebble, milk jug, and dish were near the skull; the ribs and leg bones of a pig were at the feet. A polished stone shaft-hole axe lay at the edge of the grave. The left arm was missing. It is uncertain whether dismemberment occured during life or after death if the deceased remained unburied during a period of royal funeral rites. Dismembered skeletons have been recovered from the cemeteries of Pusztaistavanhaza and Basatanya. The inventory of Tiszavalk grave No. 29 has remarkable analogies with equipment recovered from the earliest Kurgan chieftain graves in Romania and Hungary: maceheads, spearheads, flint axes, long daggers of flint or obsidian, and a leather pouch containing a pebble or lump of ochre. The Czongrád (Fig. 1) and Decia Mureşului (Fig. 17) graves are very similar to those found at Tiszavalk.

Examination of skeletal materials from the Bastanya cemetery verifies the synchronous existence of a mixed Proto-Europid and Mediterranean population (Nemeskéri in Kutzián 1963:404-405). This occurs from the beginning of the

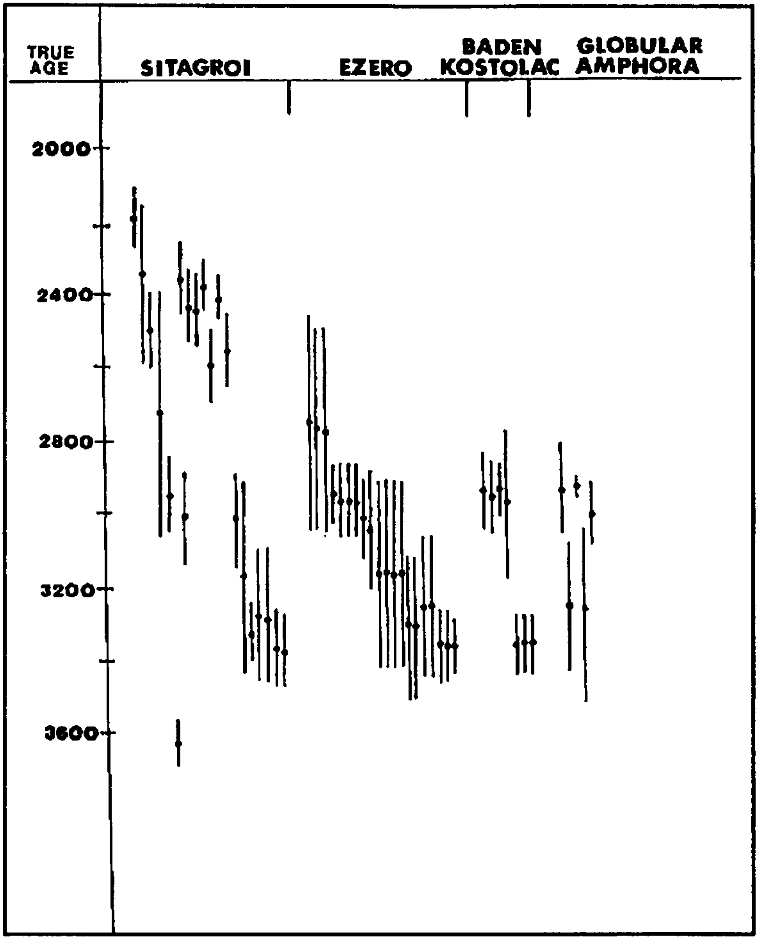

Table 5: Radiocarbon dates (graphic presentation of the Ezero, Sitagroi, Baden, and Globular Amphora complexes.

cemetery; *i.e.* of the seventy-five skeletons suitable for analysis, twenty-eight belonged to the early phase. Eleven were pure Proto-Europid, *i.e.* nearly half the total. Of these, eight were male; three represent the oldest individuals, (Nos. 5, 14, 68), aged 60 to 70 years. Males were equipped with flint and obsidian blades, mandibles of wild boar and a pig, a boar tusk, metatarsal bones, a scapula of aurochs or cattle, a bowl containing sheep bones, and vases of a local type. Dog skeletons are associated only with male graves. In summary, the data collected from Tiszapolgár cemeteries verify that the male population of the early phase was predominantly a Proto-Europid type similar to the type of Kurgan Wave #1. The wealth contained in a select number of male graves

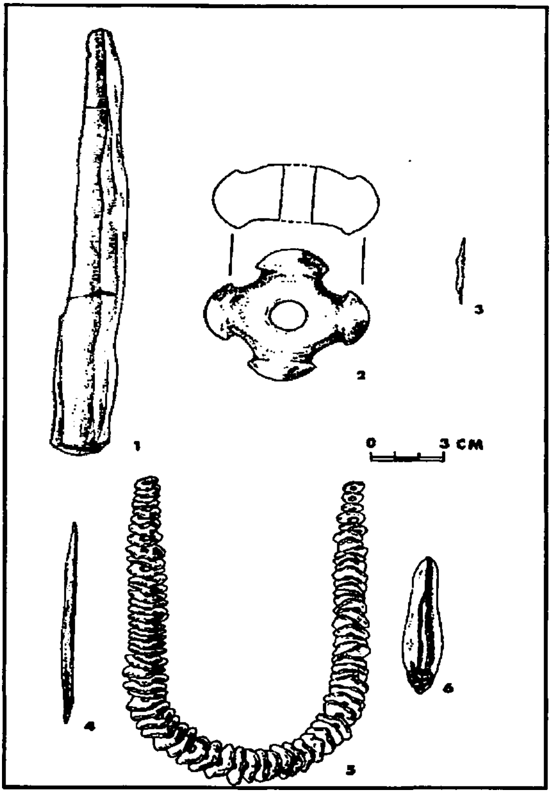

Fig. 17: Grave inventories from the Decia Muresului cemetery in Transylvania: 1-3) grave no. 12; 4-6) grave no. 11; 1, 6) flint daggers; 2) stone macehead; 3, 4) copper awls; 5) shell beads probably used for belt decoration. (*After* Kóvacs 1944.)

speaks for a stratified society in which a few individuals held high rank. Grave No. 60 was clearly the richest of 156 burials at Basatanya. It belongs to an individual, 50 to 55 years of age, whose forty-three burial gifts included eight vases, an antler hammer-axe, and several blades of flint and obidian.

The overall context of materials from women's graves suggests that the bulk of the female population was local. Vases were made in a little-changed fashion. A ceramic style peculiar to the late phase of the Tiszapolgár culture is definitively Old European in technique as evidenced by symbolically decorated pedestalled vases, "milk jugs," and dishes, amphorae, goblets, and jars. Generally, they are decorated with warts and pits or a meandroid design, thin-walled, slipped, and gray or brownish-gray in color. The pedestalled vases and amphorae were placed in the graves of both men and women.

The Lengyel Exodus to the Upper Danube, Elbe, and Oder Valleys

The settling of the "Lasinja-Balaton" people in western Hungary and eastern Austria appears to have terminated local Lengyel settlements. The final phase of the Lengyel culture is known in the northern part of Hungary and in western Slovakia as "Ludanice" or Lengyel V (Lichardus and Vladar 1964). Concurrently to the east, the Tisza basin was occupied by the Tiszapolgár people of the early Bodrogkeresztúr phase, an off-shoot of the Lengyel.

Lengyel finds do not occur north of Budapest or in western Slovakia after the Lengyel V phase. Characteristic Lengyel V ceramics – biconical and footed vessels decorated with warts – now emerge on the upper Danube, Elbe, and Oder: in Bavaria, central Germany, and western Poland. The appearance of these materials within the milieu of the central European Linear Stroked Pottery, western European Cortaillod and Michelsberg, and northwest European Funnel-necked Beaker (TRB) cultures is significant. Lengyel-based complexes in these territories carry various labels: in central Germany and Bohemia – "Gatersleben" (Götze 1900; Niquet 1937, 1938; Behrens 1961, 1969; Preuss 1961); in western Poland and eastern Germany – "Ottitz," "Jordanów" (or "Jordansmühl"), and "Brześć Kujawski" (Buschendorf 1948, 1951; Seger 1906, 1916; Jażdżewski 1938); in Bavaria – "Münschshof" (Reinecke 1927/28; Pittioni 1954); in Württemberg – "Aichbühl I" (Schmidt 1936; Reinerth 1924, 1936). Lengyel habitation also occurred in caves of the Alpine regions and the upper Danube. It is hypothesized that a ceaseless push from the south and southeast was made by the dislocated Lengyel people throughout the middle and upper Danube region.

Kurgan Elements Appear in Central Europe as far as the Upper Danube Basin

A relationship between the Cernavoda I group of the lower Danube basin and the "Furchenstich" pottery and "Rössen" complexes of central Europe is evidenced in specific cultural traditions. Foremost is the preference to locate tribal centers on high river banks or spurs. Hilltops were selected for small settlements of two or three rectangular houses with timber posts or semi-subterranean dwellings. None of these groups produced agricultural villages; all relied heavily on stock-breeding. Solar symbolism is evidenced on pottery. Decoration was by stabbing and dragging, by stick impressions, and by simple incisions, pit impressions, and notches around the rim or shoulders (Fig. 18).

Sites initially occur on the banks of the Middle Danube in Hungary and lower Austria – Békásmegyer at Budapest, Koroncó at Győr, Esztergom, Pfaffstetten, Retz, Waltrahöhle at Jamm (Seewald 1940; Pittioni 1954). They subsequently appear in the western Slovakian and Moravian basin and in Bohemia, where significant hilltop sites are Nitrianski Hrádok, Vysoki Breh, and Bajč-Vlkanovo near Nitra, Jevišovice and Znojmo, Staré Zámky at Líšen near Brno, and Cimburk at Kutná Hora in Bohemia (Točík 1964; Medunová-Štiková 1964). Occupation of new locations is determined by the presence of "Furchenstich" pottery in the bottom stratum. When present, earlier cultural deposits bear no genetic or chronological relationships. At Nitrianski Hrádok, pits with the stab-and-drag "Furchenstich" pottery were intrusive to the Lengyel cultural layer. At Jevišovice, this material occurred in the earliest layer in association with the Baalberge finds ("Baalberge" of central Germany is typified by Kurgan burial rites). The distribution of these sites shows that the "Furchenstich-Retz" culture superseded the Lengyel and penetrated into the TRB territory. To the west, in the upper and middle Rhine and upper Danube basins, it entered the Michelsberg area. The Rössen layer contains Michelsberg pottery at the systematically excavated site of Goldberg in Nördlingen Ries, a fortified hilltop settlement (Bersu 1930, 1936), with a number of semi-subterranean huts. The rectangular pits measured from 4.2 x 3.2 meters to 5.2 x 4.9 meters. Goldberg is one of the major tribal centers north of the upper Danube, analogous to those of Jevišovice, Staré Zámky, or Nitriansky Hrádok, in the middle Danube area.

For years, the "Furchenstich Keramik" was dubbed "Nordic" by German, Polish, Czech, and Austrian scholars. In Gordon Childe's opinion (1929:116), this culture was not quite "Nordic," but rather "Danordic," *i.e.* Danubian and Nordic. Sangmeister (1960) also regarded Rössen as a mixed culture: *"eine ausgesprochene Mischkultur."*

The origins of this culture are more complex than originally suspected. Much of the substratum (Stichbandkeramik and Lengyel) influence continued. Its formation was another reaction to the chain of Kurgan-generated population shifts and adaptive stresses that spread from the Danube basin into central Europe.

The sites at Wahlitz, Gonvillars, and the lower cultural stratum of the peat-bog Hüde at Dümmer in Hanover yielded Rössen (Furchenstich) materials and radiocarbon dates that place the Rössen complex from *c.* 4400-4000/3950 BC.

The Rössen chronology corresponds with that of the earliest Kurgans west of the Black Sea. This is the time period when first Kurgan elements (including the horse) appeared in central Europe.

Diagnostic Rössen beakers and bowls with round or pointed bases (Fig. 19/1-4) were recovered from the Hüde peat bog in addition to wooden piles, dugout canoes, bowls, bows for fire-making, and adzes. Other finds were two perforated amber pendants, stone and antler axes and celts (Fig. 19/5, 6, 10), flint points, borers and scrapers (Fig. 19/1, 8), bone awls and polishers, cattle and horse bones and teeth – some identified as boar's, bear's, and deer (perforations indicated that they were worn as amulets [Fig. 19/9]).

More dates are known form the Michelsberg and Schussenried or Aichbühl sites of Württemberg, such as Ehrenstein, Riedschachen, Taubenried, and Lautereck, synchronous with Rössen or associated with Rössen finds. The calibrated dates for Ehrenstein, Riedschachen, Taubenried and Lautereck fall into the period of 4300-3800 BC (Table 6). In western Slovakia, "Furchenstich" was associated with Lengyel materials at Dvory nad Žitavou at Nové Zámky (Točík 1964).

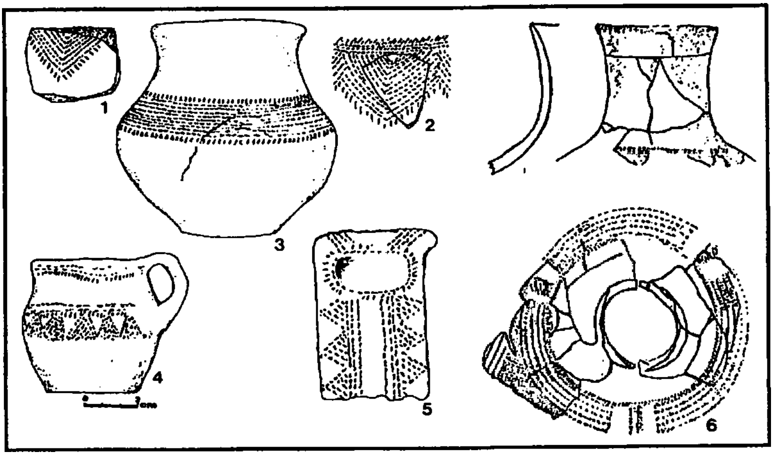

Fig. 18: "Furchenstich" (fake cord decorated) ceramics. Decoration implies solar symbolism. 1) Vădăstra, southwestern Romania; 2) Obersiggingen, Württemberg, southwest Germany; 3) Goldberg, upper Danube; 4, 5) "Jevišovice type" from Nový Liskovec and Jevišovice at Brno, Moravia; 6) Stuttgart-Gablenberg, the "Schwieberding" type. (*After* 1) Roman 1974; 2) Reinerth 1926; 3) Museum Stuttgart, photo archive Römisch-Germ. Mus. R 62 M, 30548; 4, 5) Točík 1961; Lüning 1969.)

The next stage in the "kurganization" of the upper Danube basin is represented by the Mondsee, Altheim, and Pfyn cultures that emerged during the middle of the 4th millennium BC.[7] Pastoralism is the basis of economy and way of life. A martial character is substantiated by the dominance of axe hammers with rounded butts, maces, and flint arrowheads in cultural deposits. There is a marked trade in flint, stone, and shells.

Kurgan burial rites and other practices – small round earthen or stone barrows covering graves in stone or wooden cists including single burials or accompanied by children, women, and slaves, large scale sacrifices of children

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[7] **Site and Lab No.**	**C-14 BP**	**Date b.c.**	**True Age BC**
Dullenried, SW Germany			
Hv-355	4600 ± 100	2650	3520-3370
Niedervil, Switzerland			
Pfyn Culture			
GrN-4202	4750 ± 60	2800	3640-3500
GrN-4204	4650 ± 60	2800	3640-3500
GrN-4203	4990 ± 60	3040	3930-3800

and other people, perhaps slaves, and animals (dogs, oxen, horses, pigs, and stags) and feasts – emerged in the Elbe-Saale region of Germany and Bohemia as an alien cultural phenomenon (Fischer 1956:48-66) before the middle of the 4th millennium BC. This marked change succeeded the Gatersleben group, an offshoot of the Lengyel culture. The new complex, known as "Baalberge," to this day is considered to be a southern branch of the Funnel-necked Beaker (TRB) culture of northwestern Europe (Lichardus 1976:144), which is a misunderstanding. Rather, the Baalberge, together with its successor Salzmünde, represents a kurganized Lengyel population. The TRB, on the contrary, was its rival, as can be seen from the following confrontation of several ethnic groups (the Walternienburg-Bernburg) in central Germany.

Site and Lab. No.	C-14 B.P.	Date b.c.	True Age BC
Lauterek, SW Germany			
Aichbühl Culture			
GrN-4666	5430 ± 40	3480	4400-4300
Ehrenstein, SW Germany			
Michelsberg-Schussenried Culture			
H-1747-1201*	5030 ± 80	3080	3960-3800
Bln-167*	5190 ± 100	3245	4350-3800
Bln-54	5140 ± 80	3190	4320-3920
H-61/149	5140 ± 130	3190	4350-3800
Bln-71	5200 ± 100	3250	4350-3800
H-125/107	5240 ± 200	3250	4350-3800
Bln-70	5240 ± 100	3290	4360-3800
KN-2*	5210 ± 120	3260	4360-3940
KN-191	5290 ± 120	3340	4360-3800
Riedchachen, SW Germany			
Schussenried Culture			
Hv-353	5130 ± 100	3180	4100-3800
Hv-354	5160 ± 110	3210	4100-3800
KN-27*	5310 ± 100	3360	4360-3950
Taubenried, SW Germany			
Hv-352	5110 ± 110	3160	4100-3800

*Same sample

Table 6: Radiocarbon dates from Michelsberg and Schussenried sites

The Globular Amphora Complex in the Northern European Plain

The process of culture change did not halt at the Baalberge-Salzmünde horizon. At the close of the 4th millennium BC, the Globular Amphora culture was emerging in the northern European plain between Denmark and Lithuania. This cultural entity is identified by hundreds of graves and seasonal camps. Specific burial practices of the Globular Amphora group leave no doubt that it

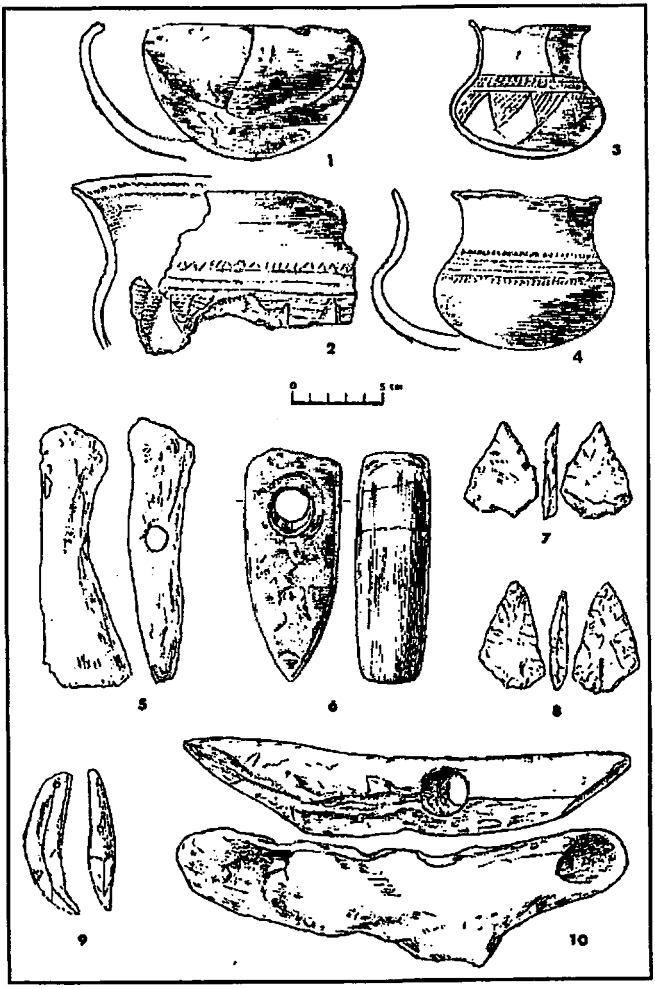

Fig. 19: Finds from the peat-bog Hüde at Dümmer in Hannover. 1-4) bowl and beakers; 5-10) antler axes; 6) stone axe; 7, 8) flint points; 9) perforated bear's tooth. (*After* Deichmüller 1953.)

was a "kurganized" culture. The population substrate appears to have belonged to the Funnel-necked Beaker (Trichterbecherkultur, or TRB) group.

Scholars agree that the Globular Amphora culture could not have developed solely out of the TRB culture (Gimbutas 1956; Wiślański 1970; Kowalczyk 1970). Its early phase is paralleled to the late TRB in northern Germany and Poland, which it subsequently superseded. Radiocarbon dates range from the close of the 4th millennium BC to the early part of the 3rd (Table 7).

There is an uncanny resemblance between the burial rites of the Globular Amphora people and those practiced 1000 years earlier by the Srednij Stog complex of Wave #1. Stone cairns of earthen barrows, cromlechs, and even stone stelae are documented (Wiślański 1970:203). These traditions are shared with and possibly were transmitted by the Tiszapolgár and Baden groups. Analogies are observed in burial gifts of boar and pig mandibles, beads, and pendants of wolf or fox teeth, as well as in ritual graves of horses, cattle, dogs, and occasionally stag. More convincing is the abundant evidence for human sacrifice in connection with funeral rites honoring high-ranking males.

The religious, economic, and social traditions of the Globular Amphora culture demonstrate that this group was structured on a system unrelated to the TRB group. TRB graves are extended burials in enormous long barrows or megalithic passage graves (occasionally topped by Globular Amphora graves).

Site and Lab. No.	Date BP	True Age BC
Serrahn		
Bln-342	4166 ± 120	3000-2500
Pevestorf		
Hv-582	4380 ± 100	3400-3040
Klementowice		
GrN-5046	4175 ± 30	2950-2500
KN-225	4440 ± 160	3400-3000
Krasnoye Selo		
GIN-148	4310 ± 45	3140-2950
Homolka (Živnač group in Bohemia = Late Baden with Globular Amphora influence)	4260 ± 70	3150-2750

Table 7: Radiocarbon dates from the Globular Amphora sites

Sixty percent of TRB graves have no grave goods; vessels are rare. In no instance do boar and pig mandibles or ritual burials of animals occur. The religion of the TRB people appears to be related to that of the megalith builders of western Europe and the Mediterranean region of Old Europe. Connections were with Old Europe, where the ram played a part in TRB symbolism even through cattle, not sheep, supported its stock-breeding economy. The Globular Amphora people did not exhibit any reverence for the ram; that is, the ram is never found in ritual animal graves. Globular Amphora tombs do, however, yield dishes containing sheep bones, presumed to be either remnants of funeral feasts or food offerings for the dead. Sacrificial animals are exclusively associated with rich male burials in the Globular Amphora complex; *i.e,* three horses are buried at Potyry near Płońsk in Mazovia (Wiślański 1970:222). In some cases, skeletal materials from a single pit indicate the combined sacrifice of a child and animals. Globular Amphora graves typically contain two, three, or more skeletons. Since the principal burial is a male, we can infer that the simultaneous interment of one or more children and an adult female signifies that they were put to death to accompany the father, husband, or ruler to the other world. The possibility of coincidental deaths is overruled by the frequency of these multiple burials. Generally, the male skelteon is buried with his gifts at one end of the cist grave, while two or more individuals are grouped at the other end (Kowalczyk 1971:114-117). Male dominance is confirmed by Globular Amphora tombs. Polygyny is documented by the cist grave at Vojtsekhivka in Volynia, where a male skeleton was flanked in heraldic order by two women and four children; a young man and a young woman lay at his feet (Gimbutas 1956:146, after Levitskij 1929; Wiślański 1971:229). Double graves generally contain only one female skeleton and one or more children, so we can infer that polygyny was a privilege of high ranking males who possessed the financial means to support more than one wife.

Like their Kurgan I-II forerunners of the south Russian steppe and Danubian basin, the Globular Amphora people of northern Europe were herders who practiced limited transhumance. They lived in small units conducive to grazing herds over wide ranges, engaged in trade, and bred cattle, horses, pigs, dogs, and sheep/goats (the latter never accounting for more than 10 percent of their herds). This pattern of semi-nomadic pastoralism is documented by typical seasonal settlements of two or three rectangular timber houses; the only exception is the Rzucevo (or "Baltic Haff") variant on the Baltic coast of east Prussia. Sparce farming is indicated by the rarity of agricultural tools – generally stone hoes. The only evidence for domesticated plants is impressions of barley, wheat, and pulses in clay daub (storage pits common to the TRB never occur). In contrast to TRB settlements that cluster in regions where soils are favorable to agriculture, Globular Amphora sites are concentrated near sources of trade commodities, *i.e.* flint mining regions on the upper Vistula or amber on the Baltic coast. The distribution of Globular Amphora sites – from the Baltic to the Danubian delta – speaks for an extraordinary mobility. The unifying cultural focus of scattered herding units apparently was seasonal clan ceremonies or trading activities.

The build-up of Globular Amphora sites on the Baltic coast is clearly linked to the economic and ideological importance attached to amber. Its translucent golden hues held a symbolic significance for Indo-European groups. Amber discs carved with solar designs invariably appear in chieftain tombs of this period. Even though the fabric to which they were once attached has since disintegrated, thousands of amber buttons carved with "V" perforations must have made garments "shine like the sun." Isolated finds of horses and boars carved in amber from Woldenburg and Stolp in northern Poland are presumed to be products of the Globular Amphora people (Gimbutas 1956:pl 32/A, C). Solar motifs on Srednij Stog and Rössen ceramics are replicated in concentric cord impression around the mouths of globular amphorae or in radiating hanging triangles, zigzags, or groups of parallel vertical strokes on shoulders of amphorae and bowls.

The Globular Amphora culture was a decisive factor in the formation of the succeeding Corded Pottery complex and its Fat'janovo branch in western and central Russia. It likewise is a parent of Baltic, Germanic, and other Indo-European groups that appeared in northern and central Europe.

The chronological order of cultural complexes that emerged from the shock of Wave #1 in central and northern Europe is outlined in Table 8.

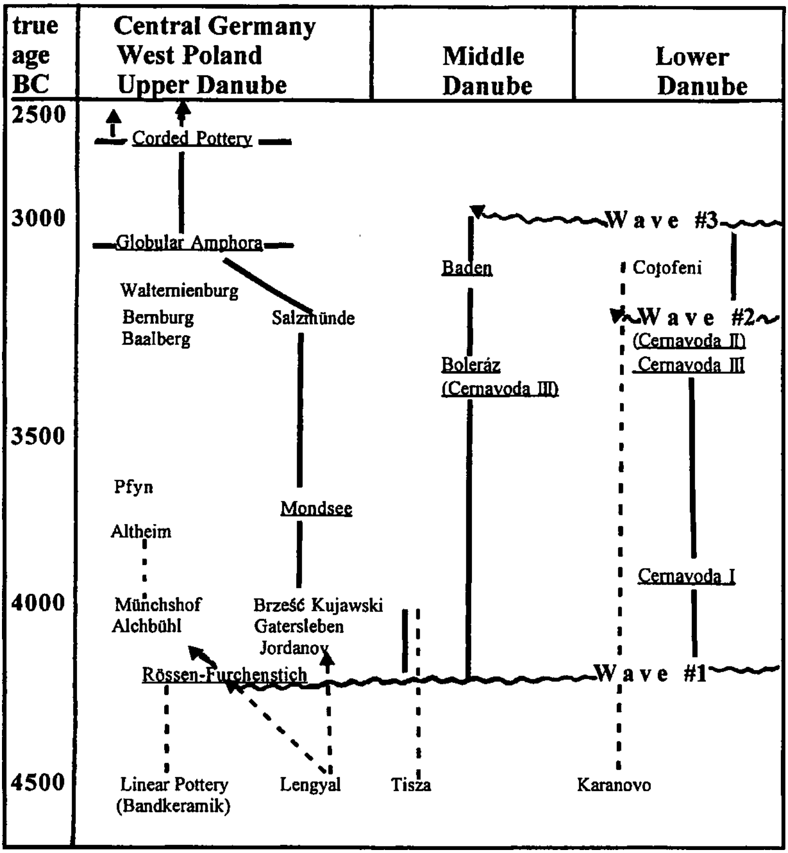

Table 8: Wave #2: *c.* 3400-3200 BC
The chronological position of archaeological complexes in the Danube basin between *c.* 4500 and *c.* 2500 BC. Underlined: "kurganized" (restructured) cultures. Disconnected lines: continuation of European tradition. Solid lines: "kurganized" complexes. Wavy lines: Incursions.

A new wave of steppe nomads gained momentum in the second half of the 4th millennium BC (Map 3: dark-shaded area and arrow with white dots). The repercussions of its path northwest of the Black Sea gave rise to the "Usatovo" complex in the steppe region of Odessa (known as "Gorodsk" in the western

Ukraine and as "Folteşti" in Moldavia). This complex, covering former Cucuteni territory, merged with subjugated Cucutenian elements. The success of nomadic incursions is evidenced in the rise of mammoth Kurgan barrows covering royal tombs at Usatovo, Sukleja in the Ukraine, and Tudorovo in Moldavia. At Usatovo, the royal barrow, 36 meters in diameter, was surrounded by a wall of limestone blocks carved with reliefs of male deities or heroes, horses, stags, and dogs. A chieftain (in supine position and with contracted legs) held a bronze dagger in his left hand (Gimbutas 1973). The dagger and a flat axe were a bronze of arsenic and copper alloy. Silver-plate daggers, copper and gold hair-rings, a cord-decorated vase, and a dish painted in the Cucutenian style were among his treasures. The frequency of Cucutenian ceramics in rich Kurgan graves seems to indicate that the nomadic conquerors appreciated the superior craftsmanship of the subjugated population.

The introduction of bronze (copper-arsenic alloy) weapons and new tool shapes – tanged daggers, halberds, sharp flat axes – is attributed to the metallurgical skills the Kurgans acquired from the people of the Kuro-Araxes Valley south of the Caucasus. The dagger is the major weapon of Wave #2 warriors who also established the use of wheeled vehicles in Europe.

The Usatovo complex in the western Ukraine and Soviet Moldavia is documented by dendrochronologically calibrated radiocarbon dates (Table 9):

Site	Lab. No.	Date BP	True Age BC
Gorodsk, west Ukraine	GrN-5099	4651 ± 35	3450-3380
Danku, Moldavia	LE-1054	4600 ± 60	3490-3300
Majaki at Adessa	Bln-792	4400 ± 100	3400-3200
	LE-643	4340 ± 65	3400-3200
	UCLA-1642G	4375 ± 60	3400-3200
Usatovo at Odessa	UCLA-1642A	4330 ± 60	3400-3200
Mikhajlovka I, lower Dnieper	Bln-630	4330 ± 100	3400-3200

Table 9: Radiocarbon dates from the Usatovo (Gorodsk) sites.

Wave #2 swept through Dobruja into the lower Danube, where it may have met resistance from the Cernavoda I people. Radiocarbon dates for the second phase of the Cernavoda hillfort are comparable to those at Usatovo:

Lab No.	Date BP	True Age BC
Bln-61a	4504 ± 100	3360-2900
Bln-61	4385 ± 100	3290-2900

The people of Wave #2 very likely took to boats and reached the shores of the eastern Mediterranean. Mention will only be made here of shaft tombs at Bâb edh-Dhrâ east of the Dead Sea yielding seven Usatovo figurines (Lapp 1966), of probably Cucutenian craftsmanship.

Wave #3: The Advent of the "Yamna" (Kurgan IV) People *c.* 3000-2800 BC

The Third Kurgan Wave was a massive invasion that wiped out the Baden culture of central Europe and led to the extermination of the Old European strongholds in the Aegean. This final thrust is identified by hundreds of graves in Romania, Bulgaria, Yugoslavia, and eastern Hungary, identical to "Yamna" burials in the lower Dnieper and lower Don area. Diagnostic features are male burials in deep pits; timber hut or tent construction within the grave; floor covers of mats, bast, or ashes; the presence of ochre; and skeletal positions (supine with contracted legs in earlier graves, on the side in later graves). In Moldavia and the western Ukraine, Wave #3 barrows are stratigraphically situated above the Usatovo- Folteşti settlements and graves (Dinu 1974). Most of the calibrated radiocarbon dates for the "Yamna" graves west of the Black Sea range shortly after 3000 BC (Table 10).

Site	Lab. No.	Date BP	True Age BC
Baia-Hamangia,	KN-38	4060 ± 160	2800-2600
East Romania	Bln-29	4090 ± 160	2800-2600
Cernavoda, East Romania	Bln-62	4260 ± 100	3140-2900
Varna, East Bulgaria	KI-89	4210 ± 60	2940-2800
Ketegyhaza, NE Hungary	Bln-609	4265 ± 80	3140-2900

Table 10: Radiocarbon dates from the Yamna (Wave #3) graves west of the Black Sea.

The Early Helladic civilization succumbed *c.* 2300 BC to descendants of the "Yamna" wave. The Indo-European occupation of Greece left the remaining centers of Old European traditions that continued to flourish to the middle of the 2nd millennium BC. At that time, the glorious culture was destroyed by ecological disturbances created by volcanic eruptions at Thera and the Mycenaean invasions of Knossos on Crete and other Cycladic islands.

Summary

The first wave of pastoralists from the Eurasian steppe infiltrated Europe at *c.* 4400-4300 BC. The ensuing repercussions were the very disintegration of the Karanovo VI civilization and the coexistence of Kurgan I and Cucuteni *A* (Tripolye B_1) complexes. By virtue of its wipespread settlements on high terraces, the Cucutenian civilization was able to defend itself from incoming steppe elements. Subsequent Cucuteni *AB* and *B* phases show scant traces of Kurgan influences. This long period of coexistence ended *c.* 3500-3400 BC when the Cucutenians appear to have been overwhelmed by more intensive Kurgan pressures of Wave #2. Elsewhere, the martial superiority of the steppe people of Wave #1 was disastrous. The Karanovo civilization and its branches in the lower Danube region were subjugated and scattered. The same held true for the Vinča, Butmir, and Petreşti cultures in the central Balkans and Transylvania. It is hypothesized that the dislocated Old European population pushed to the west and north. Vinča traditions reemerged in western Hungary. Lengyel cultural elements vanished in western Hungary and lower Austria; their reappearance in caves and islands of the upper Danube basin and regions as far north as Poland reflects a ceaseless flight west and north. The grasslands of eastern Hungary were ideally suited to pastoralism carried out by the "kurganized" Tiszapolgár group.

The culture process in Europe during the 4th millennium BC represents drastic changes in ideology and socio-economic patterns. This transformation was initiated by pastoralists of the Eurasian steppe whose success lay in their extraordinary mobility and advantage of superior weaponry. The stratified, patrilinear social structure of these small, agnatically-linked herding units was superimposed over the egalitarian substrate of Old European agriculturalists. The shift from large stock breeding was only one symptom of the kurganization process. The steppe people brought a new ideology based on male deities of the sky, war, and hunt. Solar signs, weapon-carrying gods, and ritual roles of the horse, boar, and dog replaced Old European symbols connected with the mother creator and lunar symbolism. This is particularly noticeable in the appearance of elaborate, lavishly appointed chieftain tombs that serve as archaeological markers for the path which Wave #1 cut across Europe. Repercussions that followed in its wake were also felt in the upper Danube region. At the close of the 4th millennium BC, the Globular Amphora culture of the north European plain epitomized a male-dominated society. Its later development was the Corded Pottery-Battle-Axe culture, considered to be an Indo-European culture.

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The Three Waves of the Kurgan People into Old Europe, 4500-2500 B.C.*

Introduction

Old Europe (the term Old Europe is used for Pre-Indo-European Europe during the Neolithic, Chalcolithic, and Copper Age) existed for nearly three millennia (*c.* 6500-3500 BC)[1] without major cataclysms. The culture rose in a linear fashion, unbroken by destructions or disruptions. The people lived in an egalitarian society, very probably in a matrilinear system, had virtually no weapons except in the last (Copper Age) stage, and indulged in arts and crafts, stimulated by their ideology and mythical imagery.

The second half of the 5th and of the 4th millennia at *c.* 4400-4200 BC and at *c.* 3400-3200 BC witnessed the dissolution of the Old European civilization. The three millennia long traditions were truncated by two waves of semi-nomadic horse-riding Kurgan people from the east: the towns and villages disintegrated, the magnificent painted pottery vanished; so did the shrines, frescoes, sculptures, symbols, and script. The taste for beauty and the sophistication of style and execution withered.

The drastic upheaval of Old Europe is evident in the archaeological record not only by the abrupt absence of the magnificent painted pottery and figurines and the termination of sign use, but by the equally abrupt appearance of thrusting weapons and horses, introduced by patriarchal and warlike horse riders from the Eurasian steppe infiltrating the Danubian Valley and other major grasslands of the Balkans and central Europe. Their arrival initiated a dramatic shift in the prehistory of Europe, a change in social structure, and in residence patterns, in art, and in religion, and it was a decisive factor in the formation of the Europe of the last five thousand years (Map 1). Europe became a cultural mélange.

The actual invasion of Europe is best traced through the graves of the invaders. These are round stone cairns (Wave #1) or round earthen tumuli covering mortuary houses and surrounded by stone walls or rings (Waves #2 and #3) and associated with specific grave equipment and specific rites foreign to Old Europe. To emphasize the eastern (Eurasian steppe) derivation of these graves, this author has labelled them "Kurgans" (barrow people) and the culture of the patriarchal pastoralists, a "Kurgan tradition." This term is applicable to the entire period, from the formation of this tradition in the 5th millennium BC in south Russia through the time of the thrusts into Europe at *c.* 4400-4200 BC, *c.* 3400-3200 BC, and *c.* 3000-2800 BC. In Russia and in each country of east central Europe terminology varies. Early Kurgan (Kurgan I, II) in the lower Dnieper basin in Russian is called "Srednij Stog II" (in Ukrainian, "Seredni Stig II"), in the lower Volga basin "Drevnejamna" ("early pit-grave" under barrows) or "Khvalynsk" (the name based on the site name of most recent discovery). Kurgan III is represented by the "Mikhajlovka I" (the lowest layer of the stratified hillfort at Mikhajlovka) in the lower Dnieper, by "Usatovo" northwest of the Black Sea, by "Gorodsk" in northwest Ukraine, and the "Foltești I" complex in Moldavia. Kurgan IV in Russian terminology is the period of "Jamna" (*i.e.* "pit-grave," also spelled "Yamnaya")[2] culture and the catacomb-graves. Without the introduction of a blanket name, *i.e. Kurgan,* the advent of pastoralists would be very difficult to comprehend. It is my hypothesis that Kurgan tradition and Proto-Indo-European are synonymous.

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[1] The chronology used in this article is calibrated radiocarbon chronology. The calibration is based on tree ring chronology.

The Old European and the Kurgan cultures were completely opposite; Old Europe: sedentary-horticultural, dwelling in large agglomerations; Kurgan: mobile, living in small villages. The first – matrilinear, egalitarian, peaceful; the second – patriarchal, ranked, and warlike. The respective ideologies produced different sets of gods and symbols. The Old European ideology was focused on the eternal aspects of birth, death, and regeneration, symbolized by the feminine principle, a Mother Creatrix. The patriarchal Kurgan ideology (also known from comparative Indo-European mythology) was centered on the virile male, heroic warrior gods of the shining and thunderous sky. The Old Europeans put no emphasis on dangerous weapons, whereas the Kurgans (like all historically known Indo-Europeans) glorified the sharp blade.

The domesticated horse, it seems, was the prime cause, as well as the means, for the emergence of power from the wooded steppe zone north of the Caspian and the Black Seas. When the horse was first domesticated is difficult to state with any accuracy (the presence of horse bones in the middle phase of the Dnieper-Donets culture suggests the end of the 6th millennium or *c.* 5000 BC), but the function of the horse as a riding animal is evidenced in the Volga and Dnieper steppes starting with the second half of the 5th millennium BC. Horse bones in overwhelming percentages are found in the site of the Srednij Stog II complex (Kurgan I and II) in the lower Dnieper region, dated to the period of *c.* 4400-3400 BC.

The large increase in the number of horses in the steppe zone must have broken the equilibrium between the capacity of the South Russian and Ukrainian steppes and the food demand of the rapidly growing herds. Living in small communities and able to ride, the Kurgan people could easily reach the lands west of the Black Sea where soils with high lime content in Dobruja and the Danube Valley offered ideal pasturage; it was easier to penetrate into already cultivated zones than to cultivate in the steppe. The Kurgans were cultivators on a small scale (the steppe areas cannot be farmed efficiently). Although predominantly pastoralists, they were not nomads of the Central Asian type as we know from later history.

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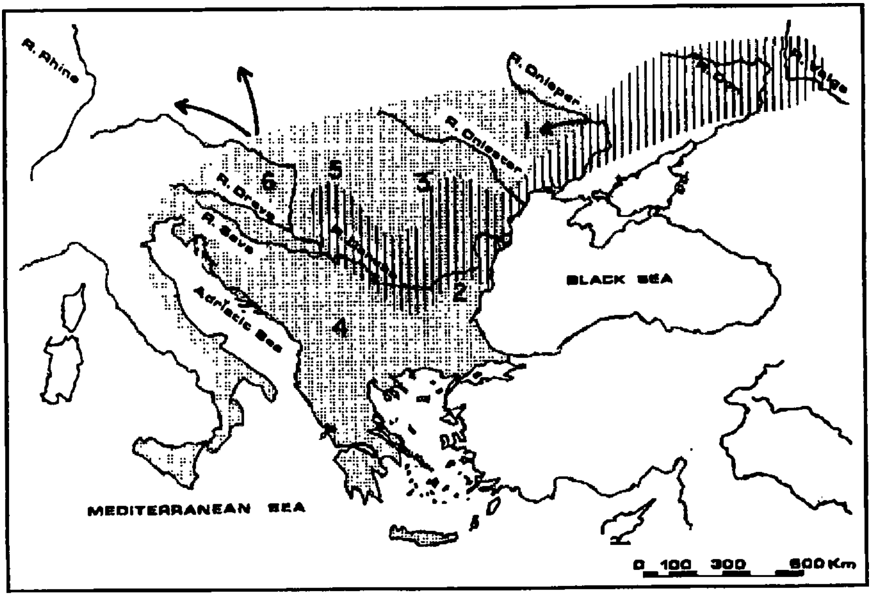
[2] For this volume the editors have normalized the spelling as Yamna [Eds.].

Thanks to the growing numbers of the radiocarbon dates, it has become possible to trace three waves of Kurgan infiltration into Old Europe: #1, at *c.* 4400-4200 BC; #2, *c.* 3400-3200 BC; and #3, *c.* 3000-2800 BC.



Map 1: Old European (Pre-Indo-European) civilization in the 5th millennium BC and Wave I incursion. 1) Cucuteni (Tripolye); 2) Karanovo (Gumelniţa in Romania); 3) Petreşti; 4) Vinča; 5) Tiszapolgár; and 6) Lengyel. Vertical striations: The Srednij Stog II (Kurgan I) complex and its wedge in the Danubian basin.

The First Wave (*c.* 4400-4200 BC) and its Repercussions

The Kurgan people first entered European prehistory in the second half of the 5th millennium BC when they appeared in the lower Dnieper basin. In the Dnieper rapids region is a stratified site with an earlier Dnieper-Donets settlement (Srednij Stog) overlaid by a new cultural complex (Srednij Stog II) whose people practiced single burial in cairn-covered shaft or cist graves (*Kamennye Zakladki* in Russian), with the body supine, either contracted or extended, and usually supplied with flint daggers or spears and beakers with pointed bases. In contrast to the local Neolithic Dnieper-Donets (Srednij Stog I) ceramics which were tempered with vegetable matter, the Kurgan (Srednij Stog

II) pots were tempered with crushed shell, and stamped, pitted or wound about the neck and shoulders with cord impressions, forming a solar motif. The skeletal remains, morover, were dolichomesocranial, taller-statured, and of a more gracile physical type than their substratal predecessors (Zinevich and Kruts 1968; Kruts 1972). Local evolution cannot account for such abrupt changes; our task then is to look for neighboring cultures typologically similar to Srednij Stog II as possible sources for this intrusive stratum. From the steppe region of the lower Volga and lower Ural we have such a parallel culture showing traits adaptive to the steppe-forest ecosystem. It is referred to by the Russians as the *Khvalynsk* culture.

Our chronology is tied to a typological comparison of *Khvalynsk* grave equipment from the Volga and Ural grassland with that found in the Pontic since no radiocarbon dates are yet available for the earliest period. The graves are rather poor in goods; sometimes the Kurgan burials are equipped with pots, shell and animal tooth beads, an occasional flint knife or dagger, antler hammers, and stylized horse heads carved in stone (Fig. 1). The typical skeletal disposition is supine, legs flexed or extended, arms alongside the body, which is dusted with ochre. The grave pits are rectangular, with traces of floor-covering (Kruts 1972). Multiple graves of a man and a woman (the widow?) or of a man with one or two children are disturbingly frequent. Evidence of horse and dog sacrifice is present. The pottery and an economy based on ovicaprid stockbreeding are relatable to the earliest Neolithic in the Middle Urals and in Soviet Central Asia.

Contemporaneously, the steppe pastoralists must have reached the Caucasus range. In the Nal'chik cemetery in Kabardino-Balkaria (in the northern Caucasus), we have burial rites and grave equipment remarkably similar to the Srednij Stog II (Merpert 1974). The most common goods were stone beads, Pectunculus shell, and the teeth of deer, goat, ox, bear, boar, and wolf. The Nal'chik skeletons lay contracted on layers of red ochre and covered with stones. The graves also contained flint and obsidian long knives (or daggers), spearpoints, scrapers, and perforators, as well as beads of marble, serpentine, and black stone. Also found there was a clay figurine with analogs in Classical Cucuteni (Cucuteni A). Barter with the Cucutenians (Tripolyans) is further indicated by copper objects – rings, bracelets, pendants – of the Karanovo VI phase (most probably made of copper from the Ai-bunar mines in central Bulgaria) found in the Dnieper (Srednij Stog II) and lower Volga (Khvalynsk) graves. All of this suggests that mobile Volga pastoralists had developed commercial relations with the Caucasus, lower Dnieper, and the Cucuteni (Tripolye) region no later than *c.* 4400-4300 BC. The "rich West" with shining copper and gold obviously was an irresistible attraction.

Kurgan intrusions into Romania, Bulgaria, and southeastern Hungary are indicated by actual Kurgan graves of Srednij Stog II type including tall-statured Crô-Magnon skeletons (described as either "Crô-Magnon C" or "Proto-Europid"), different from the gracile Mediterranean Cucuteni, Karanovo, and Tiszapolgár populations. One of the examples is the man from Csongrád in

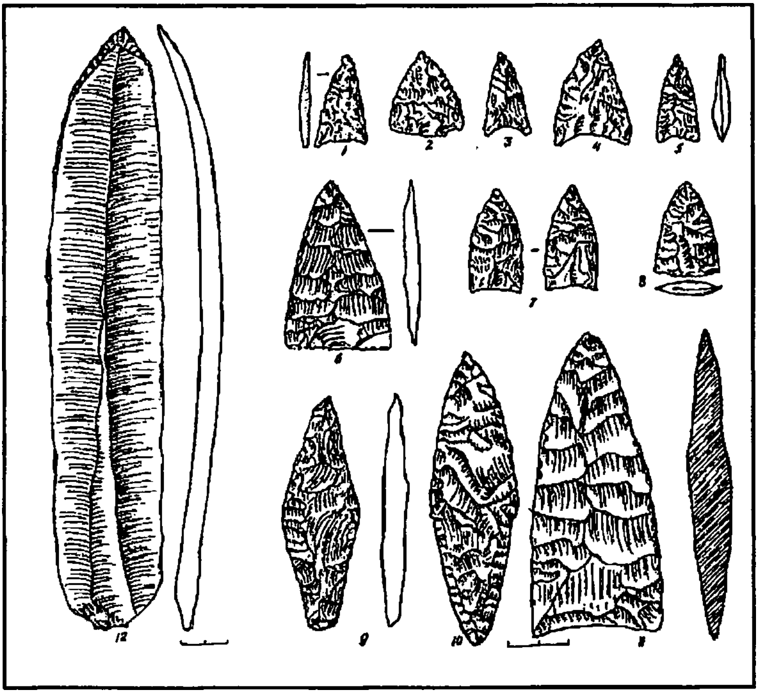


Fig. 1: Kurgan I-II (Srednij Stog II) flint weapons. Such were introduced to east central Europe during Wave I. 1) Aleksandrija; 2-5, 9) Dereivka; 6) Yama; 7) Stril'cha Skelja; 8, 10, 12) Petro-Svistunovo; 11) Goncharivka. Lower Dnieper basin. (*After* Telegin 1973.)

southeastern Hungary (Fig. 2). Typical First Wave grave equipment consisted of pointed flint blades, placed at the man's hand and even in the cairn above; these presumable thrusting daggers occur several, and occasionally as many as 15, to a grave. Bifacially worked spearpoints, triangular flint arrowheads, narrow-butted flint and polished stone axes, and the aforementioned flint blades or daggers form the prototypical Indo-European weaponry, usable from horseback, later seen in Bronze and Early Iron Age reflexes (Fig. 1). Classical examples of the burials of new people are Casimcea in the Danube delta (Popescu 1937-1940) and Suvorovo in Moldavia (Danilenko and Shmaglii 1972). The latter included a probable *suttee* burial (the practice of immolating a widow), which is also documented in the lower Dnieper graves (Telegin 1973).

First Wave graves appear to coincide with the spread of the domesticated horse west of the Black Sea as indicated by stylized horse-head sculptures of stone with incised bridles. The flat stone sculptures in the shape of a horsehead were presumably scepters, a symbol of power imbued with the sacred mana of the horse. Such sculptures have been found on the Volga steppes near Kuybyshev; north of the Caucasus near Elista; in the western Ukraine on the R.

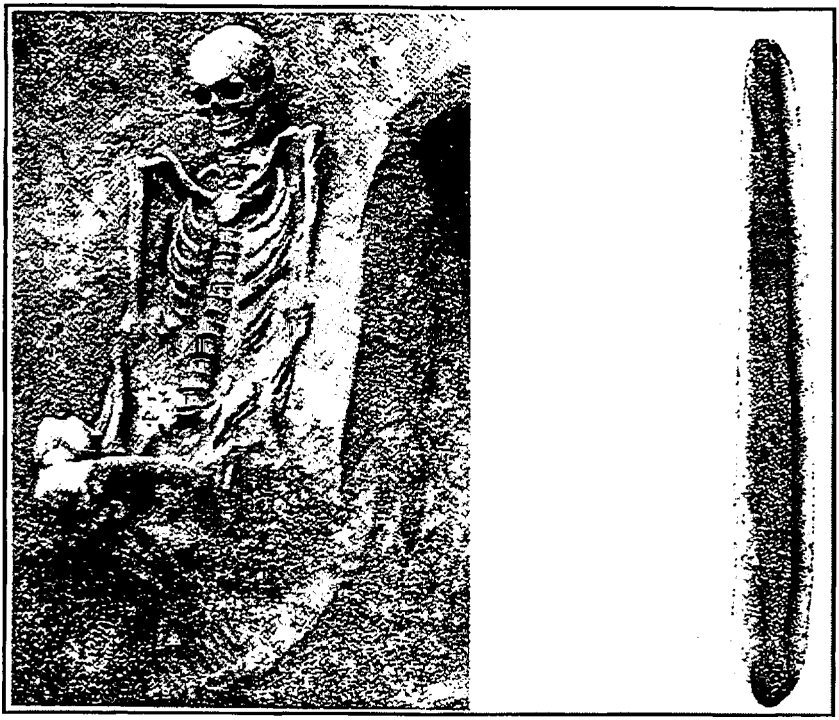


Fig 2: The grave (1) dating from Kurgan Wave #1 from Csongrád-Kettőshalom, eastern Hungary (north of Szentes). The tall-statured, dolichocranic man was equipped with an obsidian dagger found at the right upper arm; 2) beads of copper, *spondylus*, and limestone, and contained an ochre knob at the pelvis, originally contained in a pouch of organic material. (*After* Ecsedy 1972.) [See also Fig. 1, p. 202 above]

Southern Bug, in Dobruja, Moldavia (northeastern Romania), southwestern Romania, the Marica plain of central Bulgaria, and in western Macedonia (Danilenko and Shmaglii 1972; Gimbutas 1978). The presence of wheels in the form of miniature clay models is attested in the Cucuteni *A* and Karanovo VI cultures, *i.e.* at the time when the First Wave of Kurgans appeared in east central Europe. We do not know, however, if Kurgan I (Srednij Stog-Khvalynsk) people were in possession of vehicles.

The distribution pattern is striking evidence of the mobility of the horse-riding warriors. The mobile pastoral society traded for the luxuries which distinguished the ruling class. Male graves of the Kurgans typically included copper bracelets and neckrings made of Old European copper imported from the Ai-bunar mines in Bulgaria. The belt of a chief or warrior was decorated with rows of beads of copper and Aegean *spondylus* shell. Knives were made of Carpathian (northeastern Hungarian) obsidian, superior in sharpness to flint.

Not all of Old Europe was disrupted in the same way at the same time. The Cucuteni civilization was not destroyed. in spite of the fact that it lay next to the Pontic steppes; whereas the Karanovo (Gumelniţa) civilization was dislocated, and so were the Vinča, Petreşti, Tiszapolgár, and Lengyel.

The Coexistence of Kurgan Pastoralists and Cucuteni Agriculturists

The Cucuteni civilization survived the First Wave intact, probably because of the size and compactness of its communities, which sometimes had over 1000 dwellings on 300 or 400 acres. At any rate, the arrival of the Kurgans coincides with the development of the funnel-shaped defensive trenches of Cucuteni *A*. The Cucutenian ceramic tradition continued undisturbed; Kurgan elements within Cucutenian settlements (1 to 10 percent of Cucuteni *A* and *AB* pottery) indicate some sort of interaction between the two groups. This intrusive shell-tempered pottery is referred to by some as "Cucuteni *C*"; it is nearly identical to that of the Srednij Stog II (Kurgan I) level of the lower Dnieper (Movsha 1961).

By the time of Cucuteni *B*, the local populace had relocated into more naturally defensible areas and fortifications became more elaborate. In a few instances, an additional rampart was built across a river from a settlement. Through aerial photography and magnetometry the boundaries of Cucuteni sites in the district of Uman have been identified; towns over 2 kilometers long were laid out in a dozen or so concentric ellipses cut radially by streets (Shmaglii, Dudkin, and Zinkovskii 1973). The density of Cucuteni sites does not indicate massive dislocations in the wake of the First Wave of relatively small groups of Kurgan infiltrators; nor is there evidence for an amalgam of the two groups throughout these 800 years of coexistence.

The Displacement and Amalgamation of the Karanovo, Vinča, and Lengyel Cultures

For the Karanovo civilization, on the other hand, the Kurgan incursions proved catastrophic; the small farming villages were easily overrun. Karanovo groups appear to have fled from the lower Danube basin westward (Morintz and Roman 1968; Roman 1971). The Salcuţa (west Karanovo) group of western Romania took refuge in Transylvanian caves or on islands in the Danube. Layer after layer of habitation material similar to Salcuţa IV (the final phase of west Karanovo in SW Romania) indicate that the refugees had maintained a semblance of cultural identity for yet another four or five hundred years (Roman 1971). In the fine Salcuţa wares and symbolism we see a continuation of the Old European tradition. From the twenty-five sites excavated in west Romania, however, there are only a few fragments of figurines; no more lamps, miniature sacrificial tables, or human and animal-shaped cult vases were to be manufactured; the Old European religion, at any rate, was apparently dying out. Late and post-Salcuţa material indicate an inexorable impoverishment.

The Kurgan disruption of Karanovo resulted in a chain reaction of further dislocations in Yugoslavia,[3] Hungary, and Czechoslovakia, and as far west as the upper Danube basin. Cultural boundaries disintegrated as probable elements of the Vinča culture moved into western Hungary (to develop the Balaton complex), and into Croatia, Bosnia, and Slovenia (to become the Lasinja group).[4] The Tiszapolgár were then pushed into Transylvania against the Petreşti who, already hard-pressed by Kurgans from the east, vanished. The Lengyel, in turn, moved west and north along the upper Danube into Germany and Poland.

The Karanovo culture was replaced in east Romania and Bulgaria by a Kurganish complex designated Cernavoda I.[5] In contrast to the Karanovo settlements in the open plain, the fortified Cernavoda sites were often strategically located on high river terraces. The few dwellings were small, either on the surface or semi-subterranean. Antler and bone tools are identical to finds in the steppe north of the Black Sea. The people bred stock (including the horse) and engaged in hunting, fishing, and primitive agriculture. Badly baked, crushed-shell ceramics relates them to Kurgan ceramics in the Cucuteni area synchronous with Cucuteni *AB* and *B*, from about the first half through the middle of the 4th millennium BC in absolute terms.

As is well-known from historical times, the Hungarian Plain has proven to be an irresistible attraction for countless hordes of nomadic horsemen, such as the Scyths, Huns, and Avars. There is no great surprise then, when we find in eastern Hungary Kurgan elements amalgamated with the Tiszapolgár group (as indicated in over one hundred sites). Tiszapolgár habitation materials indicate a fragmentation of communities into smaller units of thirty to forty people. The evidence has been recovered from pits that may well be the remains of semi-subterranean dwellings. In the major cemeteries (at Basatanya, Tiszavalk, Magyarhomorog, Jaszladany, Hajduszoboszlo, Sazsadany, Mezösas, and Decea Mureşului) the restructured social system is reflected in a radical change in burial practice. Among the common graves there begin to appear rather elaborate tombs containing large male skeletons, accompanied by battle-axes, maceheads, copper arm and finger-rings, flint or obsidian blades, and arrowheads.[6]

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[3] In the central Morava basin, central Yugoslavia, and Macedonia are sites analogous to Salcuţa IV. The cave of Zlot, Bubanj, Hum (near Niš), and Hissar are the crucial Yugoslavian sites.

[4] The name was given to a Croatian site by Dimitrijevič in 1961 and is used for similar complexes in western Hungary and eastern Austria. The term "Balaton I," used by Kalicz (1973), is a synonym for "Lasinja." Two radiocarbon dates are known for the Balaton complex: Bln-501 4890 ± 80 BP. The true age should be between 3900 and 3500 BC. For the Lasinja complex: see Leben (1973).

[5] Named after the eponymous fortified hill in the district of Constanţa in Dobruja (Berciu 1972).

[6] In the cemetery at Tiszavalk containing forty-three graves, one burial in particular (No. 29, with a pit measuring about 2.5 meters long and over 1 meter wide) deserves special comment as the largest, deepest, and best endowed of the lot. It contained the expectedly robust chieftain lying on his side, slightly contracted, and beside his head a copper battle-axe clasped in his right hand. At the grave's edge was a polished stone shaft-hole axe. Also near his head were a round pebble, a

In the cemetery at Basatanya, seventy-five skeletons indicate a mixed population of Proto-Europid and Mediterranean types in the earliest phase.[7] Typically the male burials included flint and obsidian blades, boar mandibles and tusks, the scapula and metatarsals of cattle (or aurochs), a bowl of sheep bones, locally manufactured vases, and dog skeletons. The richest of the 156 graves at Basatanya (No. 60) belonged to a 50-to-55 year old man whose forty-three burial gifts included an antler hammer-axe and eight vases. Female burial suggests that all the women were of local extraction. There is little change in ceramics.

In east Slovakia the Tiszapolgár culture persisted through the mid-4th millennium BC. The several cemeteries of the Lažnany group (Šiška 1972) in the Carpathian foothills were the last vestiges finally submerged under the Kurganized Baden culture.

North of Budapest and in western Slovakia Lengyel disappears in its fifth phase and re-emerges in Bavaria, central Germany, and western Poland, where characteristic biconical and footed vessels with warts show up in graves and settlements along the Danube, Elbe, and Oder rivers.[8] These materials appear within the milieu of central European Linear Stroked Pottery (or Stichbandkeramik), west European Cortaillod and Michelsberg, and northwestern European Funnel-necked Beaker (or TRB) cultures. Following Lengyel V, Lengyel and Stroked Pottery in the Danube and Elbe basins seem to have been amalgamated with Kurgan elements to produce Bajč-Retz in Western Slovakia and East Austria, Furchenstich (or "stab-and-drag") Pottery along the Danube, and Baalberge in the Saale area of central Germany and Bohemia. A predilection for settlements on high river banks, an interest in horse breeding (and sacrifice), and a disinclination to lead an agricultural village life are a few traits linking the Kurganized groups in central Europe with the Kurgan tradition.

The new complexes first began to appear along the middle Danube in Hungary and Austria.[9] Subsequent hilltop sites developed in Western Slovakia, Moravia, and central Germany.[10]

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dish, a "milk-jug," and a 14 cm. long flint dagger. A disintegrated leather pouch presumably held a boar's tusk, flint scraper, triangular obsidian flake, and a pair of copper awls at the other end of the grave, where pig ribs and leg bones lay at his feet. His left arm was missing. The inventory of Tiszavalk grave No. 29 varies little from graves at Csongrád and Decia Mureşului.

[7] Of the total skeletons suitable for analysis, twenty-eight belonged to the early phase; eleven were pure Proto-Europid of which eight were male, and three (Nos. 5, 14, 68) must have been aged 60 to 70 years old.

[8] The Lengylesque complexes are variously labelled *Gatersleben* in central Germany and Bohemia; *Ottitz, Jordanów (or Jordansmühl),* and *Brešć Kujawski* in eastern Germany and western Poland; *Münchshof* in Bavaria, and *Aichbühl* in Württemberg.

[9] The important sites are Békásmegyer at Budapest, Koroncó at Györ, Esztergom, Pfaffstetten, Retz, and Waltrahöhle at Jamm.

[10] Nitrianski Hrádok, Vysoki Breh, and Bajč-Vlkanono near Nitra. Jevišovice at Znojmo, Staré Zámsky at Lisen near Brno, Cimburk at Kutná Hora (Bohemia).

The Second Wave (3400-3200 BC) and the Formation of New Cultural Complexes

From the steppe northwest of the Black Sea the Second Wave of Kurgans poured south across Dobruja, retracing the path of their First Wave cousins who, no doubt, nevertheless, offered some resistance along the naturally irresistible contours of the Danube into central Europe. Remnants of the home-base for the Second Wave consist of a hillfort at Mikhajlovka I (Lagodovska *et al.* 1962) and the hundreds of kurgans (including house-like stone cists) scattered north of the Caucasus and the Black Sea. Royal burials share a characteristic monumental style: tumuli surrounded by orthostats and stelae (engraved with geometric patterns and human and animal figures), then by an outer ring of stones; and a stone or wood lined pit (sometimes topped by a stone cupola). Among the Kurgan grave goods we find for the first time evidence of vehicles, yokes, and hard metal (a copper-arsenic alloy). Large apsidal houses appear as an architectural innovation built exclusively on hilltops. The new metallurgy and tool shapes for the daggers, chisels, awls, and flat-axes were picked up in the basin of the Kura and Araks Rivers in the Little Caucasus (Gimbutas 1973). A new metallurgical province – Circum-Pontic – developed around the Black Sea (Chernykh 1979). Old European copper metallurgy centers vanished. The beginning of the Early Bronze Age (*i.e.* the beginning of the production of hard metal) is synchronous with Wave #2.

Rock engravings from Kamennaja Mogila (at Melitopol north of the Sea of Azov) depict geometric figures, footprints, cupmarks, human and horse silhouettes. and yoked oxen (Rudinskij 1952; Häusler 1963). Large-horned oxen pulling a plough appear also on the wall of a cist grave at Züschen (central Germany) (Schrickel 1957) and on rocks at Valcamonica (northern Italy) (Anati 1976). Perhaps the Second Wave introduced the yoke and double oxen-pulled plough into central Europe. This hypothesis is supported by common Indo-European words for ploughing ('I plough': Latin *arō,* Greek 'αρόω, Lithuanian *ariu,* Old Church Slavonic *orjo,* Gothic *arja,* Irish *airim,* Armenian *arawr*) and for the yoke (Latin *yugum,* Lithuanian *jungas,* etc., from _*yeug-_). Plough agriculture was not unknown to Old Europe (antlers were used by the Karanovians, Cucutenians, and others as plough shares), but there is no record of yoked ox teams before Wave #2. The burial of an ox-team together with their owner is typical of cultural groups linked with the tradition of Wave #2 (the Baden and Globular Amphora groups). In view of such evidence it is clear that "Kurgan tradition" is not synonymous with "Asiatic nomad" who did not till the soil. The Kurgans of the period under discussion were both, that is, agriculturalists and pastoralists.

A new set of symbols appeared in Europe as far west as the Alps as documentated by the engravings on stelae found in Valcamonica, Valtellina, Alto Adige, and other valleys of the Alps in northern Italy and at Petit-Chasseur, Valais, Switzerland. Related symbols also occur in the shape of weapons and ornaments, and as a decoration on ceramics. This new set in central Europe corresponds well to the symbols extant on Usatovo-Crimea-North Caucasian stelae and orthostats, and it contrasts sharply with that of the Old European substratum present on the statue-menhirs in Italy and France. The latter represent a maternal owl-faced divinity, her insignia, and her symbols associated with the aquatic sphere. The new set of symbols obviously represents male divinities, first of all the God of Shining Sky, typical of the pantheons of the Indo-European groups. Comparative Indo-European mythologies, early historic records, and folklore strongly support the above statement. Close analogs are known from the images of Vedic *Mitra,* Baltic *Dievas,* Germanic **Tiwas (Tyr),* Roman *Dius Fidius,* Irish *Lug* ("sun-faced"). The following series of symbols shown in association one to the other and repeated on a number of stelae or large stones is of interest: the radiating solar sign shown in place of human head, a breast plate decorated with parallel lines and an outer line of zigzags (also a solar sign), a double-spiral pendant (probably symbolic of morning and evening light or day and night duality), belt, daggers, and halberds (typical weapons of this god as vehicles of his powers), a pair of oxen *("Dievas'* oxen") pulling the plough, symbolic of this god in his functions as god of fertility and agriculture. Other groups of symbols permit us to recognize other Indo-European divinities, such as for instance, the Thunder God, through the depictions of axes, bows, and arrows.

The presence of a new (Indo-European) pantheon of gods more than anything else suggests a strong influence exerted by Wave #2.

Mikhajlovka I ceramics are typified by the globular amphora with small handles, either rounded or flat base, and a cylindrical neck wound with cord impressions; semi-globular tureens also occur. Pottery was also brushed, stabbed, pitted, and beaded about the mouth, neck, and shoulders. Ordinary pots were plain and rough, while fine ware was usually brown or blackish, polished and burnished. They were tempered with crushed shell or limestone and sand. Four-legged braziers are ornamented with the solar motif. This characteristic pottery is found in Pontic area kurgans, concentrated south of the Kuban River in the western Caucasus, where some 1500 megalithic house-like structures have been counted (Tallgren 1934). These fairly uniform burial sites occur across 1500 km. of territory, in the Crimea and the lower Don, Dnieper, Ingul, and Ingulets valley[11] (Lagodovska 1946; Passek 1949).

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[11] The following chart, listing the radiocarbon dates obtained by analysis of charcoal and animal bone from the Usatovo and Majaki sites. illustrates the chronology of the Usatovo complex:

Site	Lab. No.	Date BP and BC	True Age
Usatovo	UCLA-1642A	4330 ± 60 (2380 BC)	
Majaki	Bln-629	4400 ± 180 (2450 BC)	
Majaki	UCLA-1642B	4375 ± 60 (2425 BC)	3400-3000 BC
Majaki	UCLA-1642G	4375 ± 60 (2425 BC)	
Majaki	Leningrad	4340 ± 65 (2390 BC)	

Usatovo-Gorodsk-Folteşti Complex Northwest of the Black Sea: an Amalgam of Kurgan and Cucuteni (Tripolye)

Usatovo in the steppe region around Odessa, Gorodsk in the northwestern Ukraine, and Folteşti I in Romanian Moldavia, form a complex representing an amalgam of Kurgan and Cucuteni traditions. Kurgans line the highest ridges along the rivers in the area, with the best sites located at Usatovo near Odessa and Tudorovo in Moldavia (Meljukova 1962).

A tumulus of the Usatovo complex would characteristically have a cist with even-sized orthostats; a cupola-shaped cairn above the central grave; semi-circles of stelae with engravings and reliefs; and inner and outer rings of stone. The chieftain and his *suttee* had the richest graves (the chieftain usually holding a bronze dagger in his left hand, the female equipped with silver spiral hair-rings, bead necklace, and an awl), while other adults' and children's graves were contrastively poor. Sacrificed human skulls were placed in slab-covered pits. In a kurgan at Usatovo (No. 2), a limestone sculpture of a bull's head was placed in a pit covered with red ochre and a white powder, and surrounded with four globular pots and beakers with cord impressions, and two pairs of figurines. Underneath the sculpture were three limestone beads and five human teeth. No doubt human sacrifice played some part in the burial of prominent people. In the debris of the barrow potsherds and horse, cattle, and sheep bones indicate elaborate funeral feasts.

Nearby the tumuli and settlement at Usatovo, there is a cemetery of simple, unmarked pit-graves, arranged in rows and uniformly poor in grave goods (usually with vases painted in Cucutenian tradition and an occasional metal artifact). The tumuli and the Cucuteni (Tripolye) flat graves were contemporaneous; here we have one of the best pieces of evidence for the Kurganization of Old Europe (*i.e.* the tumuli of the ruling class and the cemetery of the impoverished subjugated population).

Contrasting burial rites are paralleled by differences in habitation sites. The Kurgans introduced semi-subterranean dwellings on spurs, dunes, and steep hills along rivers. Typical are the houses at Gorodsk on the bank of the Teterev: small, about 5 meters long, with a round hearth in the center; close analogies lie in the lower Dnieper basin. Household goods are definitely not Cucutenian.

Ezero, Coţofeni, and Baden Complexes in East Central Europe: the Amalgams of Old European Substratum and Kurgan, formed after Wave #2

The Second Wave of Kurgan invaders headed south towards the lower Danube area, where they met resistance from the populace of Cernavoda I. Radiocarbon dates from the second phase of the fortified hill at Cernavoda give the same age as at Usatovo, somewhere around 3400 to 3200 BC.[12] (Berciu, Morintz, and Roman 1973). The new wave pushed Cernavoda I west and south, reshaping the ethnic configurations of central Europe. By the end of this epoch, east central Europe, Macedonia, and even western Anatolia were culturally unified. By then a chain of acropolises developed along the Danube, in the Marica plain, and at Troy, reflecting the Kurgan domination of Old Europe. The finest recently excavated hillforts are at Ezero and Nova Zagora in central Bulgaria[13] (Georgiev, Merpert, and Katincharov 1979) and Sitagroi in the Drama Plain of Greek Macedonia.[14] Radiocarbon dates indicate that they began earlier than Troy I.[15] Large kurgans with elaborate grave structures as in the north Pontic area occur now in the plains of Romania and Bulgaria. Such were found at Tarnava in the area of Vraca in northwestern Bulgaria (Nikolov 1976) (Fig. 3).

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[12] In the lower Danube known by the complex labeled Cernavoda II. The following cultural complex, Cernavoda III, is considered to have developed out of Cernavoda I.

Towards the end of the 4th millennium, only vestiges of the Old European tradition continued outside the Kurgan pole, such as the Coţofeni complex (in the Danube valley in Oltenia, western Muntenia, southern Banat, and Transylvania) dated to the 34th-30th centuries BC.[16] The Coţofeni were sedentary agriculturalists, living in solidly built houses, using copper tools, and still producing ceramics painted red and white and then burnished. Bird-shaped vases appearing in large numbers continue the cult of the Bird Goddess.

The Baden culture formed in the second half of the 4th millennium BC in the middle Danube basin (northwestern Yugoslavia, western Hungary, eastern Austria, western Slovakia, and Moravia, with its northern limits in Bohemia and southern Poland). According to presently available radiocarbon dates, Baden lasted about 500 years, from *c.* 3400-2900 BC.[17] Ceramic similarities among Baden, Troy I-II, Thermi III, Ezero, and Sitagroi complexes are not

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[13] Nova Zagora is unpublished; presently under excavation by Mit'o Kynchev.

[14] Sitagroi excavation materials of 1968 and 1969 are in press: (Renfrew, Gimbutas, and Elster 1986).

[15] Series of C14, dates from Ezero I, Early Bronze Age:

Lab. No.	C14 Date BP	Lab. No.	C14 Date BP
Bln-428	4260 (2310 BC)	Bln-522	4455 (2505 BC)
Bln-427	4365 (2415 BC)	Bln-526	4135 (2185 BC)
Bln-421	4335 (2385 BC)	Bln-523	4400 (2450 BC)
Bln-422	4310 (2360 BC)	Bln-524	4460 (2510 BC)
Bln-423	4440 (2490 BC)	Bln-525	4280 (2330 BC)
Bln-424	4575 (2625 BC)	Bln-527	4390 (2440 BC)

(Corrected: 34th-30th centuries BC)

[16] Coţofeni C14 dates:

Site	Lab. No.	C14 BP	True Age BC
Ostrovul-Corbului	LJ-3797	4570 ± 60	
	LJ-3798	4420 ± 50	
	LJ-3799	4400 ± 60	
Baile-Herculane	LJ-3533	4470 ± 50	34th-30th Centuries BC
	LJ-3534	4360 ± 60	
	LJ -3535	4360 ± 60	
	LJ -3536	4300 ± 60	

[17] Radiocarbon dates from Baden Sites:

Site	Lab. No.	Date BP	True Age
Oszentiván	Bln-476	4515 ± 80 (2565 BC)	34th *c.* BC

[For figure see Fig. 6/1 and 2, p. 277 below.]

Fig. 3: Kurgan (cross-section and plan) from Tarnava, near Vraca in northwestern Bulgaria, having close parallels in the North Pontic area of the Mikhajlovka I (Usatovo) period. 1) 3) 5) and 6) are the richest and earliest shaft graves. 5) and 6) a cremated grave (probably man's) and a grave of an uncremated young woman were within a stone wall. Among the grave equipment were vases of Baden-Coţofeni type dating the graves to *c.* 3000 ± 100 BC. (*After* Nikolov 1976.)

surprising then in light of the Kurgan hypothesis; still, some scholars would derive the Baden culture from Anatolia (Kalicz 1963).

The typical Baden village was set on a river terrace or promontory. Houses were small rectancular, semi-subterranean, with pitched roof supported by timber posts. The hill sites at Vučedol (Schmidt 1945), Sarvaš (Yugoslavia), Levoča (Slovakia), and a number near Vienna and Melk (Austria) must have served as tribal seats of power; they bear a strong resemblance to the difficult-of-access and fortified hills at Mikhajlovka, Ezero, Nova Zagora, and Sitagroi. Two apsidal houses stood atop the Vučedol hill, one considered to be the *Herrenhaus* and the other used for storage and as a kitchen. Vučedol houses were built of vertical posts and daubed with clay; their floors were clay-plastered, and dividing walls separated rooms with separate rectangular hearths.

Local metallurgy is known. At Sarvaš (northwestern Yugoslavia) we have evidence of open sandstone molds for a tanged dagger and a flat axe, as well as various by-products (Schmidt 1945). Male graves in the Budakalász cemetery at Budapest had deposits of copper-arsenic alloyed triangular dagger blades with rivet holes.

Baden cemeteries show typical Kurgan practices of human and animal sacrifice, the latter involving dog, horse, and cattle; and multiple burials, typically involving a couple with their children. Grave goods for the wealthy would include braziers, vehicle models, and copper ornaments. At Alsónémedi near Budapest several ox-teams had been sacrificed for burials. At Budakalász and Szigetszentmárton, south of Budapest (Kalicz 1976), graves included clay models of a four-wheeled vehicle (Fig. 4).

It can be surmised that the turmoil of the 4th millennium BC created a considerably mixed population. Studies of the skeletal materials have shown that the Baden population in the Middle Danube basin consisted of several

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Sümeg	A-246	4520 ± 160 (2570 BC)	34th *c.* BC
Podolia	Bln-556	4455 ± 80 (2555 BC)	34th *c.* BC
Iwanowice	M-2166	4300 ± 200 (2350 BC)	30th *c.* BC
Hissar	Bln-350	4290 ± 100 (2340 BC)	30th *c.* BC
Homolka (Řivnáč group)	GrN-4065	4260 ± 70 (2310 BC)	30th *c.* BC
Csepel Island (Budapest)	Q-1122	4170 ± 90 (2220 BC)	29th *c.* BC
Pivnica (Kostolac group)	KN-145	4110 ± 169 (2160 BC)	27th *c.* BC

types. For instance, in the area around Budapest, people whose physical type was "Proto-European C" (the steppe type) lived along with others of the so-called mixed Mediterraneans, *i.e.*, a Mediterranean type mixed with brachymorphic components. This evidence derives from the analysis of skeletal types by J. Nemeskéri from two cemeteries, Budakalász (famous for its small clay effigy of a four-wheeled vehicle) and Alsónémedi. The first were steppe type, the second Mediterranean, obviously Old Europeans (Nemeskéri in Banner 1956).

The Globular Amphora Complex North of the Carpathians, Vistula, Oder, and Elbe Basins

At *c.* 3400-3200 BC, the Globular Amphora culture was emerging on the northern European plain and north of the Carpathians, covering the present territories of central Germany, Poland, Volhynia, Podolia, and Moldavia.[18] This cultural entity is identified by hundreds of graves, seasonal camps on sand dunes, occasional hilltop sites, and fishing villages on the Baltic Sea. Before its occupation by the Globular Amphora peoples, this area was occupied by the Funnel-necked Beaker *(Trichterbecher* or *TRB)* group, affiliated with the Western European Neolithic, and by the Baalberge-Salzmünde group in Germany and Bohemia, which, as we have seen, probably represents a culture of a kurganized Lengyel population, kurganized in the wake of the First Wave.

Final conclusions on the origin and ethnic components would be premature at this time, due to the lack of quantitative research and physical anthropological data. The physical type is better known from Romania, where skeletons from seven graves were studied, too few for general conclusions (the population is described by Necrasov as "proto-europid *atténué et brachycéphalisé")* (Necrasov 1979). Cultural materials link this complex with Kurgan Wave #2. The social, economic, and religious way of life of the Globular Amphora people cannot be derived from that of the TRB. There is complete congruence between the burial rites of the Globular Amphora people and those of Mikhajlovka I in the North Pontic region: mortuary houses built of stone slabs, cromlechs, and stone stelae; ritual graves of horses, cattle, and dogs; engravings on stone slabs; also human sacrifice in connection with funeral rites honoring high-ranking males.

The assemblage of vases accompanying the dead includes a globular pot or an amphora with flat or rounded base and two or four small handles above the shoulders (after which this culture is named), a tureen or wide-mouthed beaker, and, occasionally, a cup. The cord-impressed, incised, or stabbed decoration is restricted to the neck or shoulders. The clay is tempered with crushed shells and some sand or vegetable matter. In shape and make the Globular Amphora

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[18] There are only a few Globular Amphora dates from Poland:

Site	**Lab. No.**	**Date BP**
Zarębowo	—	4623 ± 40 (2673 BC)
Klementowice	GrN-225	4444 ± 160 (2490 BC)

The true age would fall into the period between 3400-3200 BC. In central Germany and Bohemia, the Globular Amphora follows Baalberge.

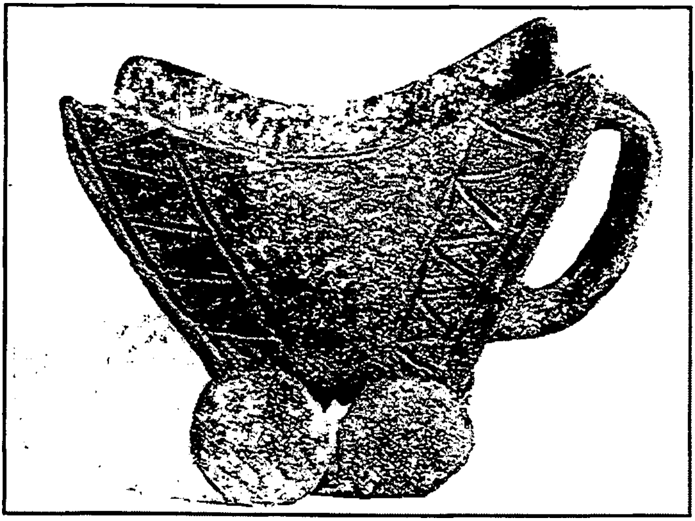

Fig. 4: A wagon model of clay, *c.* 8 cm high, from Szigetszentmárton, south of Budapest, found in a grave together with Baden ceramics. (*After* Kalicz 1976.)

pottery, particularly that of Volhynia and Poland, is very much the same as that from the Mikhajlovka I complex.

A classed structure of the society and the dominant position of men are demonstrated by graves containing, besides the very rich grave goods, astounding numbers of sacrificed animals and human beings. In such graves the adult male occupied the central position in the stone cist and was accompanied in afterlife by family members, slaves, oxen, horses, dogs, boars, and other game animals. These extraordinary graves typically contain from three to ten human skeletons buried at the same time. The sex, age, and position of the skeletons suggest that one or more young children, an adult female (wife?), and one or two attendants were put to death to accompany the father-husband-master to the other world (Nosek 1967).

The religious and social traditions of the Globular Amphora culture demonstrate that the group was structured on a system unrelated to that of the Funnel-necked Beaker (TRB) group. TRB graves contain extended burials in enormous long barrows or megalithic passage graves (occasionally topped by Globular Amphora graves). The religion of the TRB people appears to be related to that of the megalith builders of western Europe and the Mediterranean region. Connections with Old Europe – where the ram was an animal sacred to the Bird Goddess – is indicated by the prominent role of the ram in TRB symbolism. This is a notable trait inasmuch as cattle, not sheep. supported the TRB stock-breeding economy. The ideological importance attached to Baltic amber is witnessed by amber discs carved with solar designs and horse and human figures found in important male graves. They had symbolic significance for sun-worshipping people of Kurgan tradition which cannot be proved for the preceding, TRB, people. The engraving of a cult scene on a large amber disc from the rich male grave in a stone cist at Ivanne near Rovno (northwestern Ukraine) included figures of humans in a worshipping posture and a figure of a horse (Sveshnikov 1973). In style the scene is closely related to those known on stone cist walls and stelae in the Crimea and the North Pontic area.

The Globular Amphora people were herders who practiced limited transhumance. They lived in small units conducive to grazing herds over wide ranges, and they bred cattle, horses, pigs, dogs, and sheep/goats. They engaged in trade and were also hunters, fishers, and gatherers of wild plants. The pattern of semi-nomadic pastoralism is documented by seasonal settlements of two or three rectangular semi-subterranean huts or above-ground timber houses (Wiślański 1970). Hillforts and permanent settlements apparently constituted the cultural focus for a tribe or clan. Rare agricultural tools – generally stone hoes with heads perforated for a shaft, and quern stones – indicate some farming. The evidence of domesticated plants comes from impressions of barley, wheat, and pulses found in clay daub (storage pits common to Funnel-necked Beaker sites never occur).

Frequently present among the grave goods are the two major woodworking tools of the Globular Amphora people: a trapezoidal flint axe, quadrangular in cross-section, and a flint chisel, replicas of a pair of metal tools – a sharp flat axe and a chisel of copper or arsenic copper – which followed the Kurgan Wave #2 in east central Europe and have close relatives north and south of the Caucasus. In the west, where metal tools were very scarce, flint was universally cherished and used. The flint industry was seriously pursued.

The Third Wave: The Advent of the Yamna People, *c.* 3000-2800 BC

Yamna Graves in Romania, Bulgaria, Northern Yugoslavia, and Eastern Hungary

This third thrust is identified by hundreds of graves in Romania, Bulgaria, northern Yugoslavia (south Banat), and eastern Hungary (Ecsedy 1971, 1974, 1975; Ecsedy and Virágh 1973; Gazdapusztai 1964-65; Jovanović 1974; Kalicz 1968; Popov 1932), identical to "Yamna" burials in the lower Dnieper, lower Don, and lower Volga basins. Diagnostic features are male burials in deep pits; timber hut construction within the grave, roofed with oak or birch beams; floor covers of mats, bast, or ashes; textile or rug covering of walls; usually western orientation of the head; and supine skeletal position with contracted legs (on the right side in later graves). The dead were scattered with ochre, particularly around the head, (therefore this culture is called by some archaeologists ("Ochre-Grave Culture"). Lumps of ochre, the size of an egg, and eggs were laid in graves, possibly to insure blood and life power. Barrows were surrounded by stone rings or ditches. Graves were poor except for important individuals, usually males, equipped with a hammer-headed pin of bone or copper, a round

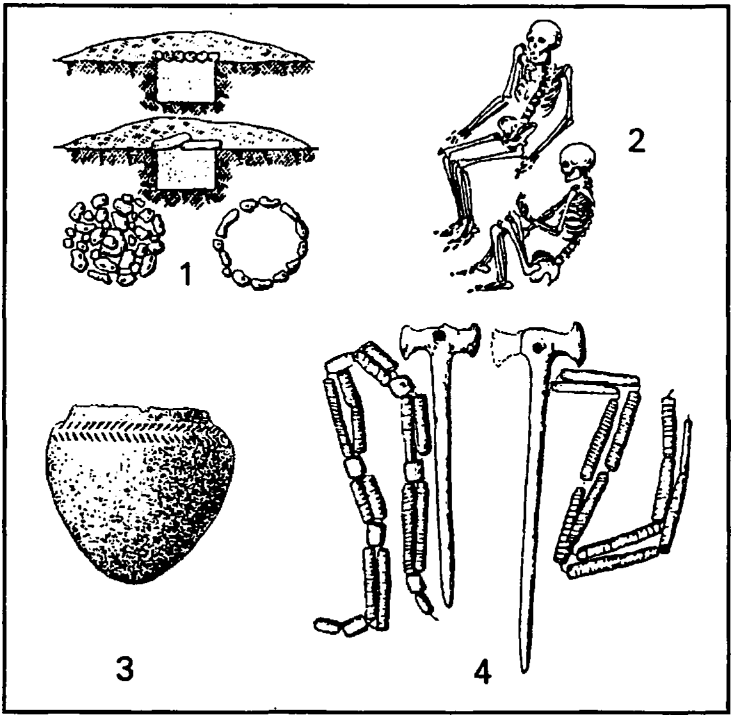

Fig. 5: 1) Schematic sections of Yamna kurgans in the steppe area of the lower Dnieper region including central graves dug deep into the ground and roofed with oak beams or stone slabs. Graves were piled with stones or circled with a stone ring; 2) the position of the dead; 3) the dominant form of pots, and 4) hammer-headed pins of bone and chains of copper wire tubes interspersed with beads or animal teeth – typical grave goods of the early 3rd millennium BC. (*After* 1-3) *Arkheologija Ukrainskoj RSR* edited by Telegin 1971, and 4) Häusler 1976.)

copper plate, spiral hair-rings or earrings of copper or silver, chains or necklaces of copper wire tubes and canine teeth, flint arrowheads, tanged copper (arsenic copper) daggers, copper awls, occasionally flat copper axes. and flint daggers or knives. Traces of hearths, fire, and of human and animal sacrifices were abundant in the barrows. Among the sacrificed animals were horses, cattle, sheep/goats, deer, bears, dogs, and rabbits. Bird bones also appear. In Moldavia and the western Ukraine, Wave #1 barrows were stratigraphically situated above the Usatovo-Folteşti settlements and graves (Dinu 1974). Most of the calibrated radiocarbon dates for the Yamna graves west of the Black Sea range shortly after 3000 BC[19] (Fig. 5).

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[19] C14 dates for the Yamna graves in Romania, Bulgaria, and Hungary:

Eighty skeletons from Yamna graves have been examined in Romania alone, a sufficient sample for conclusions. The people were strong built, tall-statured with predominantly dolichocephalic skulls, medium cranial height and rounded occipital, with variable facial massif, pronounced nose, mesoconque orbits, and a robust mandible. The type corresponds well with that of the Yamna burials in the Ukraine and south Russia (Necrasov 1979; Kruts 1972; Gerasimov 1955).

The Impact on Central Europe and the Adriatic Region: The Exodus of the Vučedol People to the West and South

Wave #3 hit the Baden-Vučedol culture, a culture of "Kurganish" (hybrid) character formed in the wake of Wave 2. The Vučedol complex is dated to *c.* 29th-27th centuries BC,[20] and named so after the Vučedol hillfort in northwestern Yugoslavia.[21] Its eastern territories yielded to the Yamna invaders. There is no Baden culture after its late (Bošaca) phase.

An intensive defense system and probable consolidation of power is seen in the chain of impressive fortresses and fortified villages. The particular concentration of settlements is around Vučedol, another around Pécs in southwestern Hungary, another south of Vienna, then in western Slovakia, and around Prague. The Vučedol materials are found now as far northwest as central Germany and as far southwest as Bosnia, Herzegovina, and the Adriatic islands. The Makó group, a branch of this culture along the Danube and lower Tisza in Hungary and western Slovakia, moved to Moravia, Bohemia, and central Germany (to form there the Řivnáč group of fortified villages (Mašek 1961; Ehrich and Pleslová-Štiková 1968). Their place was taken by Pecica and Nagyrév farmers (Old Europeans?). In western Hungary and northwestern Yugoslavia, the Vučedol complex was followed by the Samogyvár-Vinkovci complex, the predecessor of the Bell Beaker people. Furthermore, the exodus

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Site	Lab. No.	C14 BP	True Age BC
Baia-Hamangia	KN-38	4060 ± 160 (2110 BC)	30th-26th *c.* BC
(east Romania)	Bln-29	4090 ± 160 (2140 BC)	30th-26th *c.* BC
Cernavoda (east Romania)	Bln-62	4260 ± 100 (2310 BC)	30th-29th *c.* BC
Varna (east Bulgaria)	KI-89	4210 ± 60 (2260 BC)	30th-29th *c.* BC
Kétegyháza (southeast Hungary	Bln-609	4265 ± 80 (2315 BC)	30th-29th *c.* BC

[20] A few radiocarbon dates are known from Bohemia and Bosnia which suggest 30th-29th centuries:

Site	Lab. No.	Date BP	True Age
Homolka, a Řivnáč complex	GrN-4065	4260 ± 70 (2310 BC)	30th-29th c. BC
Hrustovača	Bln-564	4125 ± 80 (2175 BC)	30th-29th c. BC

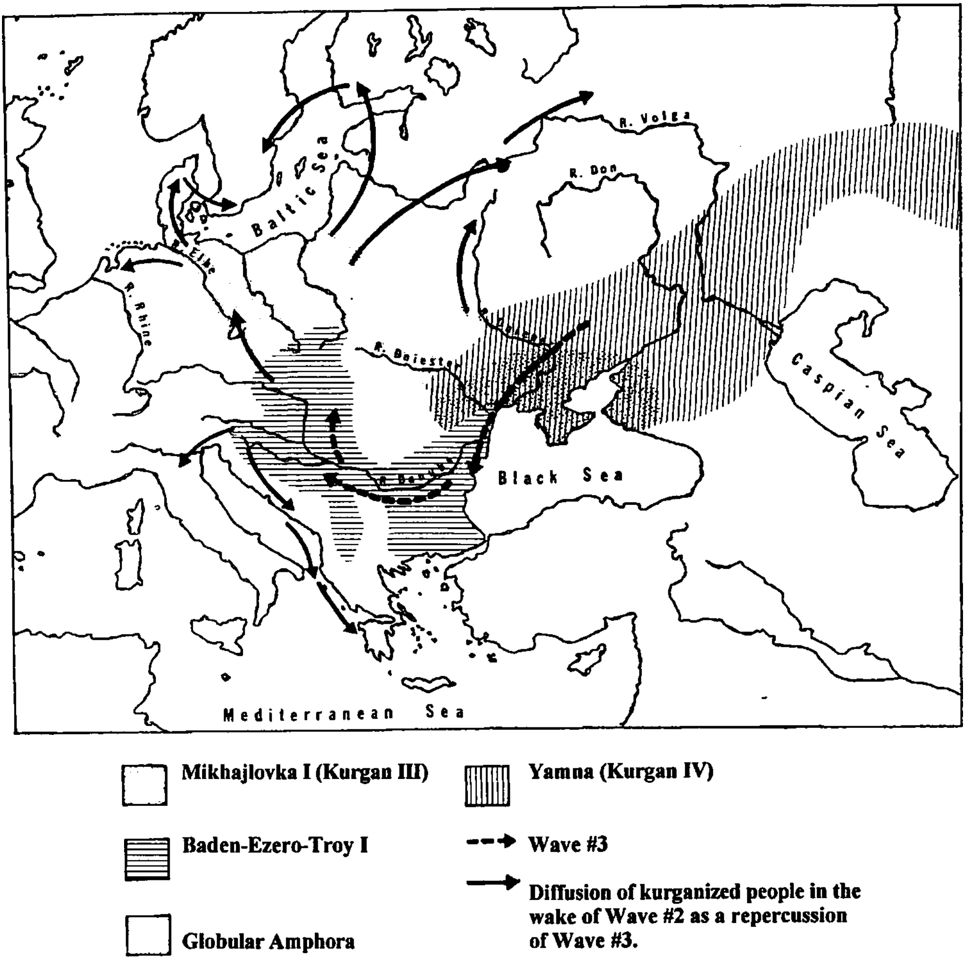
[21] Other names used for the same culture are "Zok," used by the Hungarian archaeologists, "Slavonian" or "Laibach" ("Ljubljana"), the latter after the peat bog site at Ljubljana in northwestern Yugoslavia.

of the horse-riding Bell Beaker people in the middle of the 3rd millennium, or soon thereafter, from the territories of the Vučedol culture, may not be unconnected with the constant threat from the east. They carried to the west Kurgan traditions in armament, social structure, and religion. The fact of paramount importance of Bell Beaker mobility is the presence of the horse. Several Bell Beaker sites at Budapest in Hungary (Csepel Hollandiut and Csepel-Háros) have shown that the horse was the foremost species of the domestic fauna (exceeding 60 percent); it proves a large scale horse domestication in the Carpathian basin, obviously a local tradition continued from Baden (Wave #2) times (Bökönyi 1970).

Graves bearing Kurgan characteristics appeared in western Greece (the island of Leukas and the northwestern Peloponnese) dating from the Early Helladic II and the Middle Helladic periods. The cemetery of Steno on the island of Leukas consisting of thirty-three kurgans is one of the best examples of the already settled new people in Greece (Dörpfeld 1927; Gimbutas 1973). The largest tumulus encircled by a retaining stone wall included a grave chamber containing the skeletons of a man and a woman (a *suttee* burial associated with a funeral of a royal personage?). The warriors or chieftains were equipped with triangular daggers with a midrib, some of which had hilts of gold sheaths. The grave structure, burial rites, and the equipment of important males strikingly resemble those of the Kurgan Wave #2, such as known from the Usatovo kurgans northwest of the Black Sea or Tarnava in northwestern Bulgaria (Fig. 3).

The Impact on Northern Europe:
The Corded Pottery or Battle-Axe Culture

The Globular Amphora culture was a decisive factor in the formation of the succeeding Corded Pottery complex and its offshoots in the East Baltic, central Russia (the Fat'janovo), in northwestern Europe and in southern Scandinavia. The basic economic structure (reliance on stock-breeding, plough agriculture, transhumance, lack of permanent villages, extensive flint, amber, and salt exploitation, tool kit) and specific correspondences in burial rites speak for continuity from the Globular Amphora period to the Corded period. But why such a vast diffusion north and northeastward even into the zone of a much colder climate? We hypothesize that these population shifts resulted from the pressure from the Yamna people in the cast and from the Vučedol-Bell Beaker people in the south (Map 2). Physical anthropologists will have to decide the degree of actual influx of the Yamna population into the territories of the Globular Amphora-Corded Pottery culture. Studies by Schwidetzky (1978, 1980) and (Menk 1980) have shown that the Corded Ware complex is biologically heterogeneous implying the substratum influence. However, the biological effect of the Kurgan people is evident in the regions adjacent to the North Pontic area.



Map 2: The impact of Wave #3 (Yamna) on Baden-Vučedol and Globular Amphora-Corded Pottery cultures and their shifts to the north, west, and south.

Summary

The three waves discussed in the article were responsible for the kurganization of Europe. a process enormously complex, including a hybridization of two cultural systems and of several physical types of people (the gracile Mediterranean and the more robust "Proto-Mediterranean" or "Crô-Magnon C"). The former cultural border lines disintegrated; the great Old European art and architectural traditions vanished or deteriorated; the religion and social structure changed. The horse, the wagon, the yoke, the dagger and spear, the patriarchal social structure, and new gods and mythical images (typical of Indo-European mythologies) were introduced or imposed. Old Europe was transformed but not exterminated.

Wave #1 at *c.* 4400-4200 BC. connected with the Khvalynsk-Srednij Stog II horse-riding people, equipped with flint daggers, spears, and arrows, hit eastern central Europe up to eastern Hungary in the west and caused the disintegration of most of the Old European cultural groups – the Karanovo, Petreşti, Vinča, and Lengyel. The Cucuteni (Tripolye) civilization coexisted with apparently small pockets of new arrivals. Classical agricultural villages were replaced by a hillfort-centered system. The transformation from matrifocal to patrifocal structure began. The domesticated horse and weapons used from horse-back (daggers, points, arrows) were introduced. Sun and horse symbolism appeared.

Wave #2 at *c.* 3400-3200 BC, connected with the North Pontic Maikop culture of the Mikhajlovka I phase, caused the disintegration of the Cucuteni (Tripolye) culture, the Kurganization of large territories in the Danubian and Marica basins (the formation of the Ezero-Baden complexes) and in the North European plain (the formation of the Globular Amphora complex). Hard metal (arsenic-copper alloy), yoked ox team and the plough (ard), and a set of symbols characteristic of Indo-European ideology were introduced. The consolidation of power and wealth in hillforts progressed.

Wave #3 at *c.* 3000-2800 BC, connected with the Yamna people – Kurgan tribes having relatives in the lower Volga basin and beyond – wedged again into east central Europe up to eastern Hungary and northern Yugoslavia. The Baden-Vučedol people shifted west and northwest to the Adriatic coasts and ultimately Greece, to northern Italy, to Bohemia, and central Germany. The Corded Pottery people diffused north and northeast to form there the northwest European, south Scandinavian, East Baltic, and central Russian Corded Pottery/Battle-Axe ("Fat'janovo") branches. This last wave was decisive for ethnic configurations of Europe, the wide dissemination of the Kurgan tradition, and the final formation of local groups which emerged at the dawn of the central and northern European Bronze Age.

Zusammenfassung

Die im vorliegenden Artikel diskutierten drei Wellen waren verantwortlich für die Kurganisierung Europas, ein äusserst komplexer Prozess, der die Durchmischung von zwei Kultursystemen und mehreren physischen Typen (die grazilen Mediterraniden und die robusteren Cromagniden) mit sich brachte. Die früheren Kulturgrenzen wurden aufgelöst, die grossen "alteuropäischen" Kunst- und Architekturtraditionen verschwanden oder degenerierten; die religiösen und gesellschaftlichen Strukturen änderten. Das Pferd, der Wagen, das Joch, der Dolch und der Speer, das Patriarchat, neue Gottheiten und neue – typisch indo-europäische

– mythologische Symbole wurden eingeführt oder aufgezwungen. «Alt-Europa» wurde transformiert, jedoch nicht ausgelöscht.

Die *erst Welle* (4400-4200 BC; kalibriert), hervorgegangen aus den nordpontischen Reitervölkern der Khvalynsk-Srednij Stog II-Kultur, überflutete das östliche Mitteleuropa bis nach Ost-Ungarn und brachte die meisten alteuropäischen Kulturgruppen (Karanovo Petreşti, Vinča und Lengyel) zum Verschwinden. Die Cucuteni-Kultur (Tripolje) hingegen existierte weiter, durchsetzt zwar von inselartig in sich abgeschlossenen Gruppen von Neuankömmlingen. Die klassischen Ackerbaudörfer wurden durch ein System von Hügelbefestigungen abgelöst; die matrifokale Struktur wurde durch die patrifokale ersetzt. Das domestizierte Pferd wurde eingeführt, desgleichen typische Reiterwaffen (Dolch, Pfeil, Bogen). Sonne und Pferd erhielten Symbolbedeutung.

Die *zweite Welle* (3400-3200 BC; kalibriert), in Beziehung stehend mit der nordpontischen Majkop-Kultur (Mikhailovka-I-Phase), bewirkte die Auflösung der Cucuteni-Kultur, sowie die Kurganisierung ausgedehnter Gebiete des Donau- und des Maritzabeckens (Bildung des Ezero-Baden- und des Kugelamphorenkomplexes). Hartmetallegierungen (Arsenkupfer), das Joch (Ochsengespann), der Pflug, sowie eine Anzahl von typisch indo-europäischen Symbolen wurden eingeführt. Macht und Wohlstand der Hügelbefestigungen wurden weiter konsolidiert.

Die *dritte Welle* (3000-2800 BC; kalibriert), in Verbindung stehend mit den Jamna-Völkern (Kurganstämme mit Beziehungen zum unteren Wolgabecken und weiter östlich) wurde wiederum bis in das östliche Mitteleuropa vorgetrieben (Ost-Ungarn und Nord-Jugoslawien). Die Baden-Vučedol-Populationen wurden nach Westen und Nordwesten gegen die Adriaküste, und schlussendlich nach Griechenland, Norditalien, Böhmen und Mitteldeutschland abgedrängt. Die Schnurkeramik-Bevölkerungen strömten nord- und nordostwärts und bildeten dort die nordwesteuropäischen, südskandinavischen, ostbaltischen und mittelrussischen Zweige der Schnur- und Streitaxtkulturen.

Diese letzte Welle war von entscheidender Bedeutung für die ethnische Ausgestaltung Europas, für die weite Verbreitung der Kurgantradition, sowie für die Bildung örtlicher Gruppen, die in Nord- und Mitteleuropa mit der Frühbronzezeit in Erscheinung traten.

Résumé

Dans cet article, l'auteur discute le processus de «kourganisation» de l'Europe. Ce processus, d'une extraordinaire complexité, se serait déroulé en trois vagues successives. Il a eu pour conséquence l'hybridation de deux systémes culturels et de plusieurs types physiques (les Méditerranoïdes graciles et les Cromagnoïdes robustes). Les frontières culturelles préexistantes s'effacèrent; les grandes traditions artistiques et architecturales de la «Vieille Europe» disparurent ou dégénérèrent, de même que les structures religieuses et sociales. Le cheval, le chariot, le joug, le poignard, la lance, le système patriarcal, de nouvelles divinités et de nouvelles images mythologiques – typiquement indoeuropéennes – furent introduits ou imposés. La «vieille Europe» fut transformée, sans être exterminée.

La *première vague* (4400-4200 BC, en datation calibrée), reliée aux peuplades équestres équestres de steppes nord-pontiques (Khvalynsk - Srednij-Stog II), et équipées de poignards en silex. de lances et de flèches, firent irruption dans l'est de l'Europe centrale en avançant jusqu'en Hongrie orientale. Elle causa la désintégration de la plupart des cultures de la «Vieille Europe» (Karanovo, Petreşti,

Vinča et Lengyel). La civilisation de Cucuteni (Tripolye) persista en coexistant avec les envahisseurs, eux-mêmes regroupés en îlots. Les villages classiques d'agriculteurs furent remplacés par un système d'habitation centré sur des fortifications situées sur des collines. La structure matrifocale commença a se transformer en une structure patrifocale. Le cheval domestiqué fut introduit et, avec lui, des armes typiques de guerriers équestres (poignard, arc, flèches). Le soleil et le cheval apparurent dans les symboles.

La *seconde vague* (3400-3200 BC, en datation calibrée), en liaison avec le complexe nord-pontique (civilisation de Majkop, phase Mikhailovka I), provoquait la désintégration de la civilisation de Cucuteni-Tripolye, la kourganisation de vastes parties des bassins du Danube et de la Maritza (formation des complexes Ezero-Baden ainsi que des amphores sphériques). Introduction de métaux durs (alliage cuivre-arsenic), du joug (attelage de boeufs). de l'araire, ainsi que d'un ensemble de symboles caractéristiques de l'idéologie indo-européenne.

La *troisième vague* (3000-2800 BC, en datation calibrée), apparentée aux populations «Jamna» (tribus kourganes parentes proches des populations occupant la partie inférieure du bassin de la Volga, ainsi que la région a l'est de celle-ci), pénétra à nouveau dans l'est de l'Europe centrale jusqu'en Hongrie orientale et en Yougoslavie septentrionale. Les populations de Baden-Vučedol furent refoulées en direction de l'ouest et du nord-ouest vers la côte adriatique puis, finalement, vers la Grèce, l'Italie du Nord, la Bohème et l'Allemagne centrale. Les populations de la civilisation du Cordé se déplacèrent vers le nord et le nord-est pour former les branches ouest-européennes, sud-scandinaves, est-baltiques et centro-russes (Fatjanovo) du complexe de la céramique cordée et des haches naviformes. Cette dernière vague fut déterminante quant à la structuration ethnique de l'Europe; elle fut responsable de la diffusion très vaste des traditions kourganes, ainsi que de la formation de groupes locaux qui émergèrent à l'aube de l'âge du Bronze de l'Europe centrale et septentrionale.

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Discussion

RIQUET: Que pensez-vous des vieilles théories émises par Childe au sujet de la diffusion des langues indo-européennes et, notamment, du rôle supposé important qu'auraient joué les Cordés?

GIMBUTAS: Seit Childe ist nun schon sehr viel Zeit verflossen, und sehr viel neues Material ist inzwischen bekannt geworden. Im gegenwärtigen Zeitpunk scheint diese Drei-Wellen-Theorie am plausibelsten unsere Kenntnisse zusammenzufassen. Die Vorgänge sind natürlich recht kompliziert, indem gewisse Regionen eben mehrfach von diesen Wellen berührt wurden und indem sich, entsprechend den Interaktionen mit den Lokalpopulationen, verschiedenartig ausgeprägte «mélanges» ergeben haben. Alle drei Wellen sind jedoch proto-indoeuropäisch, doch handelt es sich nicht um ein und dasselbe Volk; es müssen verschiedene Stämme in Betracht gezogen werden. Nordeuropa wurde doppelt indo-europäisiert: 1) von Ausläufern der ersten Welle (Trichterbecherkultur; die Baalbergerkultur weist Kurgane auf und kennt Hügelbefestigungen; zudem treten Steinkistenbestattungen auf, wie überhaupt das Begräbnisritual ganz indo-europäisch war); 2) von der zweiten Welle via Kugelamphorenkultur. Hinsichtlich des physischen Typus herrscht jedoch noch eine grosse Konfusion.

STLOUKAL: Alle drei Wellen kamen aus demselben Ursprungsgebiet. Somit könnte man vermuten, dass der Unterschied nur chronologisch ist?

GIMBUTAS: Im Verlauf der Zeit haben natürlich wichtige Veränderungen stattgefunden. So ist zum Beispiel die zweite Welle sehr mobil (Wagen, etc.) und weist einige neue Elemente (Mesopotamien, Transkaukasus) auf.

STLOUKAL: Ist dabei aber die biologische Population die gleiche geblieben?

GIMBUTAS: Gleich oder nicht gleich: das kann ich nicht beantworten. Auf jeden Fall waren sie sehr ähnlich.

SCHWIDETZKY: Sie haben die typologische Terminologie der Anthropologie bemängelt. Ich gebe Ihnen vollkommen recht: wir sollten Begriffe, die einen geographischen Ursprung suggerieren, (wie Nordid, Mediterranid) aus unserem Vokabular streichen. Sie müssen jedoch vorsichtig sein, wenn Sie mit dem in Russland gebräuchlichen Begriff «paläeuropid» umgehen. Dieser entspricht praktisch völlig dem Begriff des «Cromagniden», den wir in Europa eigentlich überall antreffen können. Wenn daher z.B. in Ungarn Paläeuropide auftreten, so brauchen das nicht unbedingt Kurgan-Leute zu sein.

GIMBUTAS: Ich bin sicher einverstanden mit Ihnen. Doch wenn man diese Typen in ihrem vollen archäologischen Kontext betrachtet, so wird ihre besondere Stellung sofort klar. In Ungarn sind die Unterschiede zur lokalen Tiszapolgar- oder Lengyelkultur offensichtlich.

MACHNIK: Sie haben eine sehr interessante und spektakulare Rekonstruktion eines sehr wichtigen Abschnittes der Bevölkerungsgeschichte vorgelegt. Zeit, Entfernung und archäologische Merkmalsverteilung müssen gebührend berücksichtigt werden, insbesondere im vorliegenden Fall, wo die zeitliche und räumliche Ausdehnung ja sehr beträchtlich ist. Ich möchte hier einige Vorbehalte anbringen. I) Kurgane sind uns aus vielen Gegenden und Epochen bekannt, jedoch sehr oft nur von aussen: bevor man sie in die Argumentation einbezieht, müssten sie unbedingt ausgegraben werden. 2) Sie haben auf Beziehungen zwischen Kaukasus und der nord-pontischen Steppe hingewiesen. Ausser der Metallurgie sehe ich zwischen der Kuro-Arax-Kultur und der Steppenkultur überhaupt keine Beziehungen, und auch die Metallurgie – da zu weit verbreitet und daher atypisch –

scheint fraglich. 3) Die von Ihnen vorgelegte «Kurgan-Grundlage» scheint mir zu schmal zu sein, um eine so generelle Theorie wie die der Indoeuropäisierung voll stützen zu können. Überdies sind noch weitere Wellen, so z.B. aus Anatolien, bekannt.

GIMBUTAS: Ich würde natürlich noch gerne zwanzig Jahre zuwarten um weiteres Material einzubeziehen. Wir sind jedoch verpflichtet. ständig zu synthetisieren um einen Fortschritt (via Dialog) überhaupt erst zu ermöglichen. – Zur Beantwortung Ihrer Einwände: 1) Im Gegensatz zum Steppengebiet, wo Kurgane über lange Zeiträume weiterexistierten (Skythen, Sarmaten), sind diese in Rumänien und Bulgarien zeitlich eng begrenzt. 2) Ich babe nie behauptet. dass die Kuro-Arax-Kultur indoeuropäisch oder kurganisch gewesen sei; ich sprach nur von *Kontakten* von Steppenvölkern und Transkaukasien. Im Osten des Kaukasus gibt es ebenfalls Steppen, und von dort sind sehr wahrscheinlich die ukrainischen Steppenvölker gekommen. wobei dann eben von der Kuro-Arax-Kultur ausgehende Elemente wie Arsenkupfer, Wagen. Joch, etc. übernommen wurden. 3) Bei meiner Theorie ist nicht allein die Kurgan-Grundlage massgebend. Linguistik, Mythologie, sowie die Archäologie ganz allgemein gehören ebenso dazu.

RIQUET: A la période charnière qui nous occupé (environ 2000 BC), il y avait en Anatolie centrale (Cappadoce) un groupe indo-européen, les *Hittites*, qui se sont substitués à la population locale, à laquelle ils ressemblaient étrangement. Sur le plan culturel, c'est un groupe mixte qui a adopté des éléments de provenances très diverses. Si nous n'avions que l'archéologie, ou que l'anthropologie, nous ne saurions pas que c'était un groupe indo-européen; il faut donc être pluridisciptinaire. Mais il faut tout de même se méfier, car, à partir d'un certain seuil, il n'y a plus forcément concordance entre le type physique et le type culturel ou linguistique. Les Celtes en fournissent un autre exemple.

The Kurgan Wave #2 *c.* 3400-3200 B.C. into Europe and the Following Transformation of Culture*

The transformation of Old Europe increased progressively with each incursion of the patriarchal pastoral people from the steppe. The parts of Old Europe which had survived Kurgan Wave #1 declined after Wave #2. New cultural complexes emerged in central and northern Europe with the amalgamation of the newcomers with the indigenes. The transformation in the wake of Wave #2 of Old Europe into Indo-Europeanized Europe is marked by: 1) change in social structure from matrilinear and egalitarian to patriarchal, patrilinear, and classed society; 2) by thorough change in habitation pattern and architecture – from large agricultural villages to hillforts and semi-subterranean dwellings; 3) by intensification of the pastoral economy and the increasing importance of cattle and horses; 4) by a rapid change of metallurgical technology – Old European copper metallurgy was replaced by the circum-Pontic copper-arsenic metallurgy and the production of weapons; 5) by the dramatic change in cult and religion from the worship of a female goddess as Creatrix and Giver-of-All, to the worship of male, warrior sky gods; and 6) by physical change of population, highest in the east, at the point of initial impact, and lowest in the west.

If Kurgan Wave #1 in the second half of the 5th millennium BC caused the start of the disintegration of Old Europe *i.e.,* Pre-Indo-European Europe (Gimbutas 1977), Wave #2 was responsible for its completion. The second half of the 4th millennium BC is characterized by a pronounced divergence from the Old European pattern. The Old European element remained only as an undercurrent. The interplay of the old and the new is a most challenging phenomenon for study. What is essential to the understanding of this critical period of European prehistory is the recognition that it involves the confrontation and transformation of two very different culture systems.

I interpret the transformation from purely agricultural to a mixed agricultural/pastoral economy, from a society matricentric, theocratic, and egalitarian to a sharply classed patriarchal society, as a successful process of Indo-Europeanization accomplished by the pouring into Europe of peoples from north of the Black Sea and the Caucasus. The change of social structure in Europe was nowise a gradual development in Old Europe.

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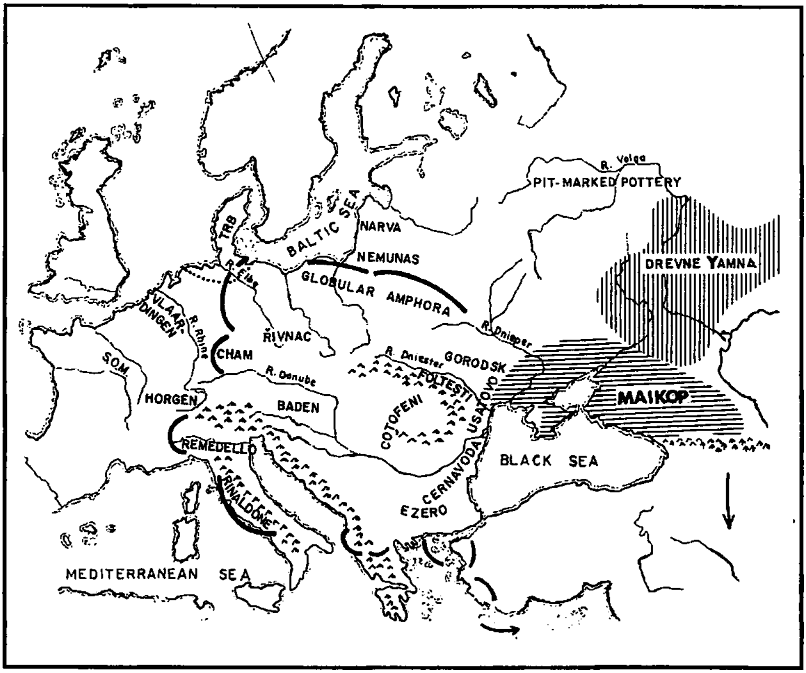


Map 1: New culture groups in central and northern Europe (solid line) with Old European and Kurgan components *c.* 3400-2900 BC, formed after Wave #2. North of the Black Sea: source area for Wave #2, the Maikop culture of Mikhajlovka I phase (Kurgan III).

The period of transformation coincides with changes in metal technology, the beginning of the Early Bronze Age in the circum-Pontic region, which replaced the Old European Copper Age. This circumstance is directly connected with Wave #2.

The new metallurgy is characterized by bronzes of copper and arsenic, copper and tin, and copper with arsenic-tin (As, Sn, As-Sn bronze) which replaced the Old European pure copper metallurgy (Chernykh 1978, 1980). The complex of tools and weapons that emerged north and west of the Black Sea – daggers, knives, halberds, chisels, flat axes, shaft-hole axes – does not show a continuity from Old European local types. Rather, the shapes of bronze artifacts have analogies in the Caucasus and in Transcaucasia. The metallurgic techniques as well as the shapes of tools and weapons were most probably acquired in Transcaucasia when the Kurgan people settled in the Kura and Araxes valley *c.* the middle of the 4th millennium BC (Gimbutas 1973). Subsequently, bronze metallurgy and the specific types of artifacts were introduced to the territories north and west of the Black Sea and were widely diffused by a mobile pastoral people (Map 1).

The Source: The North Pontic Maikop Culture

The home base of the Second Wave are the remnants of hillforts and the hundreds of Kurgan tumuli and house-like cists concentrated north of the Caucasus and the Black Sea (Fig. 1). "Royal burials" share a characteristic monumental style: tumuli are surrounded by orthostats and stelae, then an outermost ring of stones; within and below the tumulus is a stone- or wood-lined pit, sometimes topped by a stone cupola. In the grave goods we find evidence of vehicles, yokes, and hard metal. Large apsidal houses are found exclusively on hilltops.

Hillforts with cyclopean fortifications, such as Liventsovka on the lower Don and Mikhajlovka near Kherson in the lower Dnieper basin, and outstanding tumuli including exceptionally well-built tombs of stone slabs, suggest a hierarchic society of consolidated tribal units ruled by leading families. The similarity of ceramic, stone, and metal artifacts recovered northeast and northwest of the Black Sea indicates the probable unification of this region by commercial contacts and perhaps by political power as well. It seems that the complex of the North Pontic region had at this stage diverged from its Kurgan cousin of the Volga-Urals, for the Kurgan elements that appear west of the Black Sea are clearly connected with the North Pontic, not with the Volga steppe and beyond. Known from the end of the 19th century, the "royal tomb" at Maikop

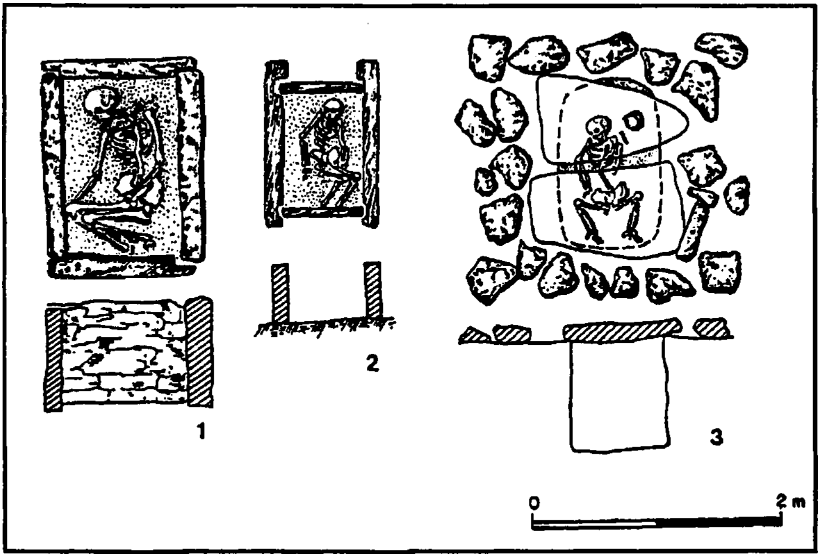


Fig. 1: Stone- and wood-lined cists 1, 2) and a shaft-grave covered with large stone slabs and surrounded by stones; 3) from the kurgans of the Kemi-Oba group in the Crimea. 1) Mamaj; 2) Abdala; 3) Evpatoria. *(After Arkheologija Ukraini* 1971.)

in the northwestern Caucasus is the richest and best known monument of this culture. And although it dates from the mid-3rd millennium BC, or several centuries earlier, and thus to the later part of the culture, the place-name has become eponymic of the whole North Pontic culture which began soon after the middle of the 4th millennium BC. The beginning phase of the Maikop culture is best represented by the lowest layer of the Mikhajlovka hillfort in the lower Dnieper basin. We shall consider here certain details of this particular phase which seem to be directly related to the westward movement.

The Mikhajlovka hillfort near Kherson, surrounded by several walls of limestone boulders, was undoubtedly a strategic Kurgan center (Lagodovska *et al.* 1962). The finds from its lowest horizon, Mikhajlovka I (Kurgan III stage), show close affinities to those from Crimean and north Caucasian stone cists on the one hand, and, on the other, to the Usatovo kurgans around Odessa and other areas of the Western Ukraine and Moldavia. The chronology of this phase is based on radiocarbon dates from Mikhajlovka:

Bln-629	4400 ± 100 BP	(2450 b.c.)
Le-645	4340 ± 65 BP	(2390 b.c.)
Bln-630	4330 ± 100 BP	(2380 b.c.)
TRUE AGE:	**3400-3000 BC**	

There were two wattle and daub houses at Mikhajlovka I with apsidal ends (one measured 16.5 x 5 meters; the other, 5.7 x 12 meters, was partially subterranean); in the center of each was a round, clay-daubed stone hearth. Flint arrowheads, points, scrapers, bone awls, and pottery were gathered in the work-area of the north apse. The houses had been razed by fire, leaving the charred remains of wood posts, balks, and wattle; the ashes covering the floors may be the burnt remains of mats or rugs.

Roughly 95% of the animal bones at Mikhajlovka I represent domesticated species. In the diet of the well-to-do, lamb was particularly appreciated, and boar was a favorite item; whereas in the lower-class semi-subterranean dwellings at Tsviklivtsi where domesticated cattle, pig, sheep, horse, and dog make up only 40.5% of the animal remains, the other 59.5% (bones of boar, roe deer, elk, bear, fox, badger, marten, hare, beaver, otter) indicated that much of the diet was supplemented by hunting (Movsha 1970). Fish bones and *unio* shells were also found in the hearths. Querns, and flint sickles with side retouch, indicate some farming activity.

Rock engravings from Kamennaja Mogila (at Melitopol north of the Sea of Azov) depict cupmarks, geometric figures, footprints, human and horse silhouettes (Fig. 2), and – most important – yoked oxen pulling a cart (Rudinskij 1952; Häusler 1963) (Fig. 3/1). Large-horned oxen pulling a plough appear also on the wall of a cist grave at Züschen (central Germany) (Fig. 3/2) and on the stone stelae at Valcamonica, northern Italy (Fig. 3/3). These engravings provide graphic evidence that plough agriculture was practiced no

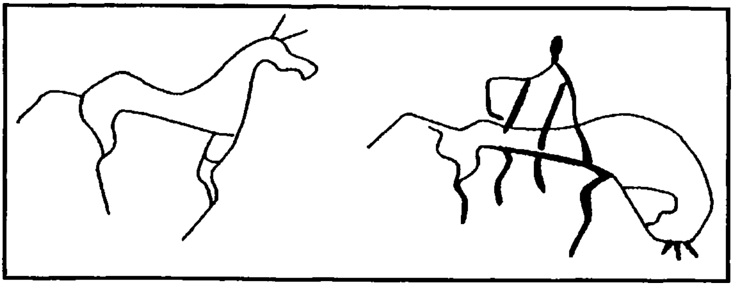


Fig. 2: Rock-engraved horse and a horse-rider, presumed to be of Mikhajlovka I period, second half of the 4th millennium BC. Kamennaja Mogila near Melitopol, north of the Sea of Azov. (*After* Häusler 1963.)

later than the latter half of the 4th millennium BC, and that yoked oxen were used to pull the cart and plough. Figurines of pairs of oxen made of copper or bronze, found in Poland, probably belong to the same period (Fig. 3/4).

Mikhajlovka I ceramics are typified by globular amphorae with rounded or flat base and cylindrical neck wound with cord impressions (*cf.* Fig. 12); semi-globular tureens also occur. Pottery was brushed, stabbed, pitted, and beaded

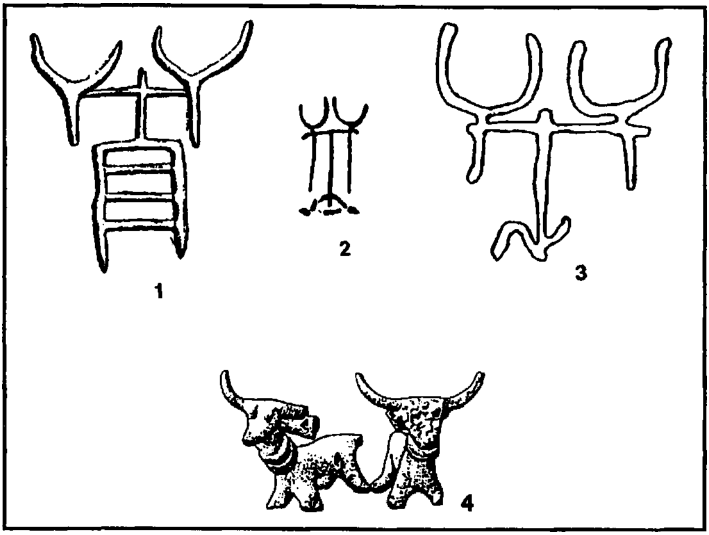


Fig. 3: Rock engravings of yoked oxen pulling a vehicle and a plough. 1) Kamennaja Mogila, north of the Sea of Azov; 2) Züschen, central Germany; 3) Valcamonica, northern Italy (*after* Häusler 1963); **4) copper figurines of oxen found in a depot together with six flat axes at Bytyń near Szamotuły, district of Poznań, Poland.** (*After* Müller-Karpe, III, 1974.)

about the mouth, neck, and shoulder. Four-legged braziers were ornamented with the solar motif (Fig 4). Ordinary pots were plain and rough, while fine ware was usually brown or blackish, polished, and burnished. The ceramic was tempered with crushed shell or limestone and sand.

This characteristic pottery is found in Pontic area kurgans concentrated south of the Kuban River in the western Caucasus; there some 1500 megalithic house-like structures have been counted. These fairly uniform burial sites occur in the Crimea (Shchepinski 1963) and in the lower Don, lower Dnieper, Ingul, and Ingulets valleys (Telegin 1971). The elaborate megalithic graves were surrounded by orthostats (sometimes engraved, as at Verbovka on the lower Dnieper, with geometric patterns) and an outer ring of stones. The cist walls were engraved with figures of men and male animals or painted in red ochre with zigzag, cross, solar, and triangle designs. Some of the Crimean and Caucasian cists were incised with mountain, water, and sun symbols reminiscent of scenes on silver vases from Maikop. Hundreds of anthropomorphic stelae are distributed in the North Pontic area (most were found in secondary position, covering cists of a later phase than Mikhajlovka I); at Nal'chik, one cist was built almost entirely from such anthropomorphic stelae (Chechenov 1970) (Fig. 5).

Usatovo-Gorodsk-Folteşti Complex Northwest of the Black Sea: An Amalgam of Kurgan and Cucuteni Traditions

Usatovo in the steppe region around Odessa, Gorodsk in the northwestern Ukraine, and Folteşti I in Romanian Moldavia form a complex representing an amalgam of Kurgan and Cucuteni traditions. Barrows line the highest ridges along the rivers of the area, the best sites located at Usatovo near Odessa and Tudorovo in Moldavia (Lagodovska 1953; Meljukova 1962.) A tumulus of the Usatovo culture had characteristically a cist with uniform orthostats, an entrance corridor, a cupola-shaped cairn above the central grave, semi-circles of stelae with engravings and reliefs, and inner and outer rings of stone. The probable leading member of the tribe and his *suttee* had the richest graves, while graves of other adults and children were contrastively poor. Human skulls, like sacrificed chattels, were placed in slab-covered pits. Near the settlement and tumuli at Usatovo there is a contemporaneous cemetery of the indigenous Cucuteni culture of simple, unmarked (flat) pit-graves, arranged in rows.

Contrasting burial rites of the Cucuteni and Kurgan populations are paralleled by differences in their respective habitation sites. Cucuteni dwellings were on wide river terraces. The Kurgans located their semi-subterranean dwellings on spurs, dunes, and steep hills along rivers. The houses at Gorodsk on the bank of the River Teterev are typical: small, about 5 meters in length, and with a round hearth in the center (Passek 1949); close analogies are found in the lower Dnieper basin. This is a dramatic change in the western Ukraine from the spacious Cucuteni above-ground houses.

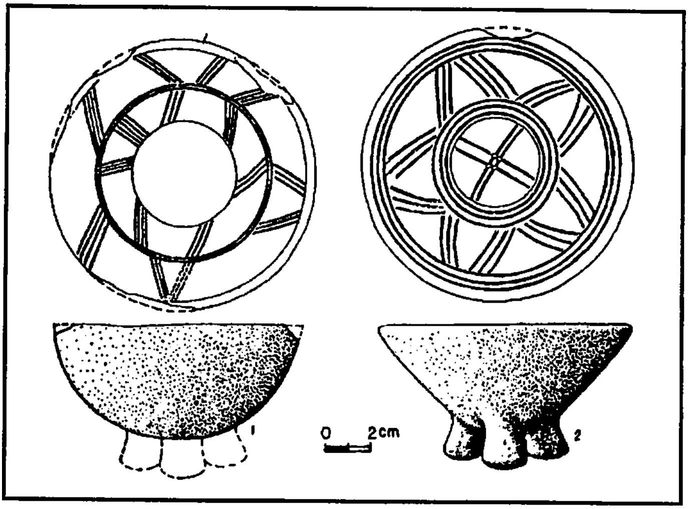


Fig. 4: Braziers with interior decorated with solar design. 1) Leontiivka; 2) Mikil'ski, lower Dnieper, north of the Black Sea. Mikhajlovka I phase of the Maikop culture. (*After* Telegin 1971.)

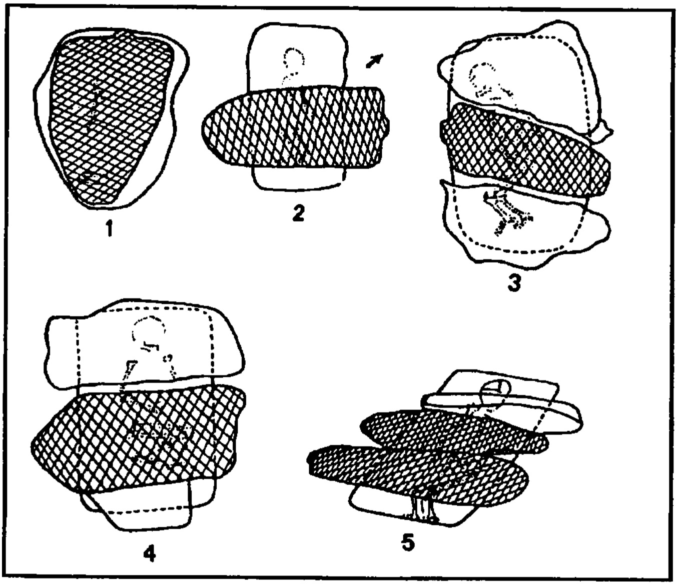


Fig. 5: Stone cist graves. North Pontic Maikop culture. Anthropomorphic stelae (striated stone slabs) were used for construction which suggests a long use of stelae in this region. 1) Akkermen'; 2) Gorokhivka; 3) Mikolaiv; 4) Illicheve; 5) Shiroke. (*After* Telegin 1971.)

Household goods are definitely not Cucuteni (Tripolyan). There are large quantities of flint tools (end scrapers, oval and crescent scrapers, perforators, cutting tools, celts, spear points and arrowheads, flakes, nuclei), points, awls, and polishers of bone and of deer antler; perforated stone axes, grinding stones (although no grain has ever been recovered), and spindle whorls decorated with solar, tree, and horse designs, unknown in Cucuteni settlements. Bones of domesticated animals are plentiful: horse, cattle, pig, and ovicaprid. Hunted species include elk, red deer, boar, brown bear, aurochs, beaver, and otter. Bones of sturgeon and skeatfish, stone net-sinkers, and bone fishhooks indicated fishing activity throughout the river drainage and along the coast of the Black Sea. Potsherds, recovered mainly from hearths, show a rough corded pottery, pitted and stabbed; occasionally painted ware and figurines are alien elements intruding from the native Cucuteni context.

The following chart lists the radiocarbon dates obtained by analyses of charcoal and animal bone from the Usatovo and Majaki sites of the Usatovo complex:

Site	**Lab. No.**	**Date BP**	**True Age**
Usatovo	UCLA-1642A	4300 ± 60 (2380 b.c.)	
Majaki	Bln-629	4400 ± 100 (2450 b.c.)	
Majaki	UCLA-1642B	4375 ± 60 (2425 b.c.)	3400-
Majaki	UCLA-6142G	4375 ± 60 (2425 b.c.)	3000 BC
Majaki	Leningrad	4340 ± 65 (2390 b.c.)	

A New Kurgan-Dominated Culture in East Central Europe: Ezero, Baden, and Coţofeni Groups

The Second Wave of Kurgan invaders headed south from the North Pontic region across Dobruja towards the lower Danube area, apparently not without resistance from the populace of Cernavoda I (the Kurganized complex in the wake of Wave #1), as attested by the fortified hill at Cernavoda. Radiocarbon dates from the second phase of the hill give the same age as at Usatovo, *c.* 3400-3200 BC. By that time, a chain of acropolises and tumuli along the Danube, in the Marica (Bulgaria) plain, and in the area north of the Aegean, reflect the spread of Kurgan domination of Old Europe (Fig. 6). Western Anatolia was infiltrated at the same time. The finest hillforts recently excavated are at Ezero, central Bulgaria (Georgiev, Merpert, *et al.* 1979) and Sitagroi on the Drama Plain of Greek Macedonia (Renfrew 1970). Radiocarbon dates indicate that they began earlier than Troy I, *i.e.*, 34th-32nd centuries BC.

In the lower Danube, Marica, and Macedonian plains, many Karanovo tells were surmounted by hillforts (such are the above-mentioned Ezero and Sitagroi, and a considerable number in central Bulgaria: Karanovo VII, Nova Zagora, Veselinovo, and Bikovo). In other areas, steep river banks and almost inaccessible promontories were selected as seats of the ruling class. The new lords seem to have successfully eliminated or changed whatever remained of the

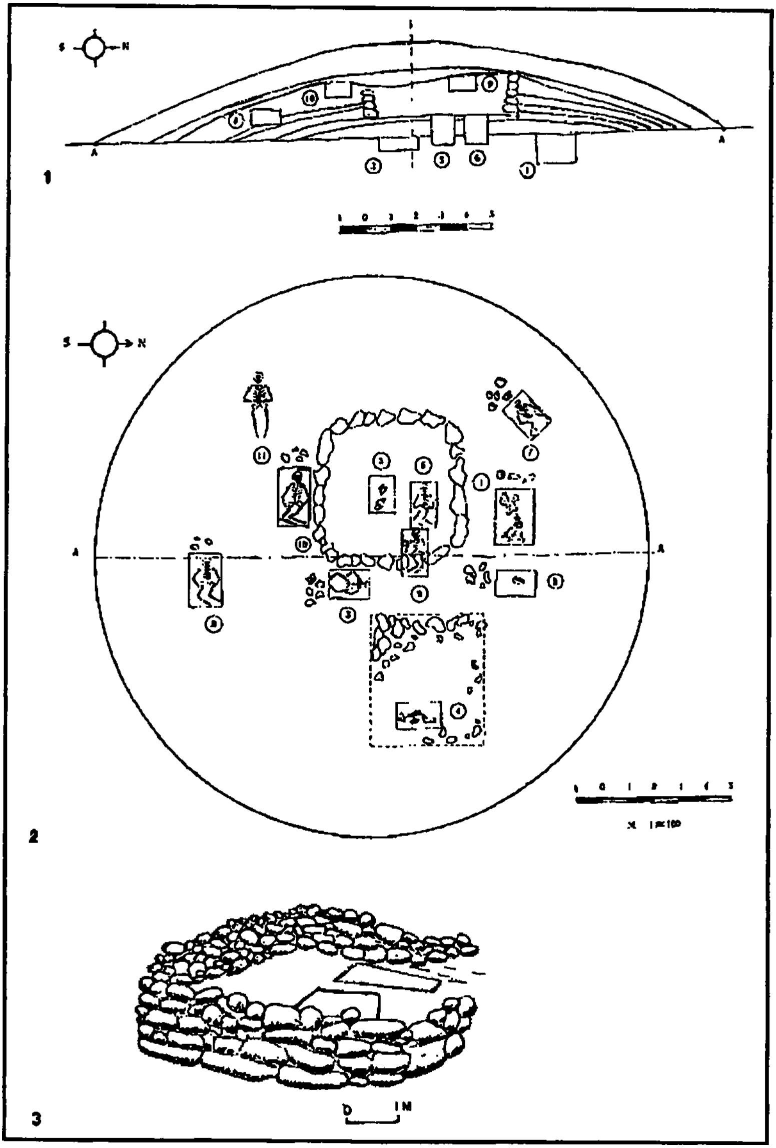


Fig. 6: Kurgan of Usatovo-type from Tarnava near Vraca, northwestern Bulgaria. It consists of several superimposed barrows and secondary interments of several phases of the Baden-Coţofeni culture. 1) cross-section; 2) plan; 3) central grave of the second barrow containing two shaft-graves (5 and 6) surrounded by a massive stone wall. (*After* Nikolov 1976.)

old social system after the first patriarchal pastoralist (Wave #1) incursion. Hillforts were the foci of power and cultural life. The surrounding area supported either pastoral or agricultural populations (depending on the environment and substratum). Their villages were small, the houses usually semi-subterranean, a pattern unknown to Old Europe (Fig. 7). But in economy and religion, amalgamation of the Old European and the Kurgan cultural systems is clearly evident. Thus in some areas, *e.g.*, central Bulgaria, emmer, barley, vetch, and pea agriculture continued intact, probably carried on by the remaining indigenous population. In other territories, seasonal camps of a pastoral economy prevailed.

The new metallurgy, with links to the circum-Pontic region, was now practiced all over east central Europe. Metal production was dominated by the dagger, the shaft-hole axe, and the flat axe of arsenic bronze. (Fig. 8). Metal workshops (including clay bivalve molds) are found on hillforts (Berciu 1966). Ornaments are found only in the elaborate graves of upper class people. However, the ceramic artifacts manifest certain Old European traditions: anthropomorphic, zoomorphic, and ornithomorphic vases of beautiful workmanship were apparently produced by surviving Old European craftsmen. Such exceptional creations are typically found in the hillforts and rich tombs under large tumuli, not in the ordinary villages or graves of the lower class. The situation seems analogous to that of Mycenaean Greece where surviving Minoan craftsmen continued to produce masterpieces of ceramic, gold, and stone. The Old European symbolism vanished from popular artifacts. Spindle whorls and dishes were ubiquitously decorated with crosses and radiating motifs.

Towards the end of the 4th millennium, only isolated islands of the Old European tradition continued. Such was the Coţofeni complex in the Danube valley in Oltenia, western Muntenia, southern Banat, and Transylvania (Morintz and Roman 1968). The Coţofeni were sedentary agriculturalists, living in solidly built houses, using copper tools, and still producing burnished red and white painted ceramics in Karanovo (Gumelniţa) tradition. Large numbers of bird-shaped vases attest the continuing cult of the Bird Goddess. In southern Oltenia and southern Banat, characteristic Old European traits persisted to the mid 2nd millennium BC.

In the best explored area, the Middle Danube basin, particularly Hungary and western Slovakia, hundreds of excavated sites afford a good opportunity to follow the cultural development at this critical period of European prehistory. Although treated as a separate culture, the "Baden" (named after Baden-Königshöhle near Vienna; also called "Pécel" or "Radial-decorated Pottery culture") complex is actually a western branch of the overall culture complex between western Anatolia and Poland. It covered the middle Danube basin, with northern limits in Bohemia and southern Poland. In the south, it is known in the Morava-Vardar valleys of Yugoslavia and even from Albania (Benac 1980).

According to presently available radiocarbon dates, Baden lasted some 500 years, *c.* 3400-2900 BC (calibrated chronology). This period is subdivided into three phases: early (Boleráz), middle (classical Baden), and late (Bošaca). Almost a thousand Baden sites (counting surface finds) bespeak a population increase since the break-up of Vinča and Lengyel (Banner 1956; Sochacki 1970; Tasić 1967).

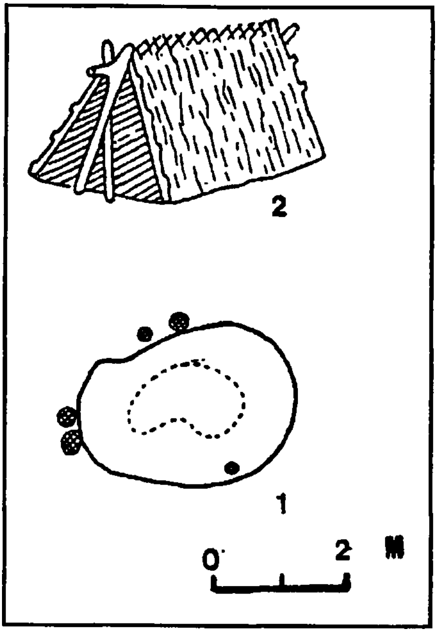


Fig. 7: Baden pit-house; 1) pit and post-holes; 2) reconstruction of the roof. Grodkowica, district of Bochnia, southern Poland. (*After* Sochacki 1970.)

The hill sites at Vučedol and Sarvaš (northwestern Yugoslavia), Nitrianski Hrádok near Nitra and Levoča (western Slovakia), a number near Vienna and Melk (Austria), and in southern Poland, must have served as seats of tribal power; they bear a strong resemblance to the difficult-of-access and heavily fortified hills at Mikhajlovka in the lower Dnieper and Liventsovka at Rostov on the River Don in the Ukraine. Atop the Vučedol hill stood two apsidal houses of the classical Baden phase (not unlike the two free-standing apsidal houses of the hillfort of Mikhajlovka I). (Fig. 9). One is considered to be the "Herrenhaus" and the other a storage place and kitchen. The houses were built of vertical posts and clay daub; the floors were clay-plastered, and dividing walls separated the rooms, each with its rectangular hearth. Apsidal houses are known also in Bulgaria (Karanovo VII and Nova Zagora), in Macedonia, northeastern Greece (Sitagroi V), central and southern Greece (Lerna IV, Thebes, Asine), and in Turkey (Troy Ib and Karatas in Lycia) (Warner 1979). Although houses with

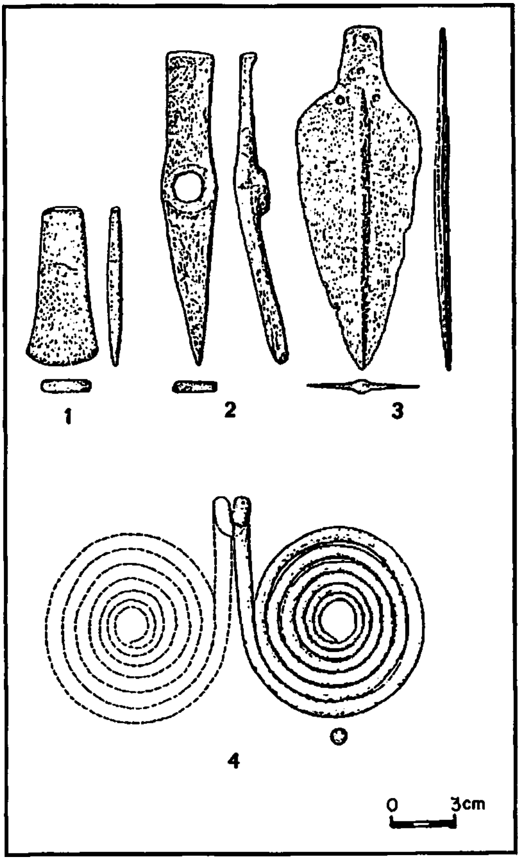


Fig. 8: A flat axe, shaft-hole axe, dagger, and a double-spiral pendant found in a depot at Malé Leváre, Slovakia. The objects probably were an offering to the God of the Shining Sky (this set of weapons, tools, and ornaments repeats on stelae: Figs. 18-22). (*After* Gallay and Spindler 1972.)

apsidal ends are reported from Old Europe (Lengyel, Vinča, Butmir, and Dimini groups), it is unlikely that apsidal houses of the Troy-Ezero-Baden type are direct descendants of the former since their functions were different: Old European houses with apsidal ends did not differ in function from other houses in the village, whereas Baden-Ezero apsidal houses were exclusive on the leading hillforts and were free-standing. Moreover, apsidal houses emerged in Palestine during the 34th-33rd centuries BC (at Megiddo, Meşer, Jericho VII-VI, Beth Shan XVI, Rosh Hannigra II, Kirbet Kerah I, Tell Yarmuth B, II, and Byblos III) together with other foreign culture elements (gray pottery, tournettes, and copper tools) (Best 1976) and are most probably not unconnected with Wave #2 which did not stop at the Dardanelles but proceeded to the eastern Mediterranean area as well.

The typical Baden village was set on a river terrace or promontory. Houses were small, rectangular, semi-subterranean, with pitched roofs supported by timber posts; the largest were 3.5 x 4.5 meters; clay-plaster hearths were either round or rectangular. Above-ground dwellings occur most often in western Slovakia and Hungary.

Baden settlements were both permanent and seasonal. Caves were also occupied. Sochacki's study (1970, 1980) shows that stable settlements were more or less confined to the uplands and the northwestern portion of this culture, whereas small short-lived settlements are found in the lowlands of eastern

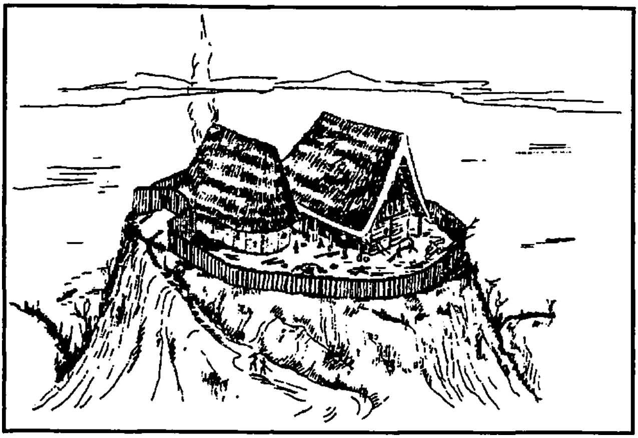


Fig. 9: Reconstruction of houses (one with apsidal end) of the Vučedol hillfort, Baden horizon. (*After* Schmidt 1945.)

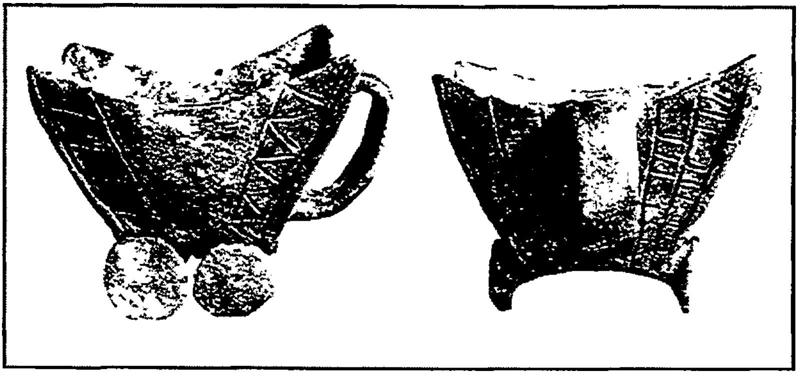


Fig. 10: Miniature wagon model of clay found in a grave at Szigetszentmárton near Budapest. (*After* Kalicz 1976.)

Hungary and Yugoslavia. The pattern of permanent settlement is clearly linked with the tradition of the substratum populations (Lengyel and Funnel-necked Beaker).

Farming prevailed in the areas where permanent settlements are found. At Ossarn (eastern Austria) and Grodkowice (Cracow, southern Poland) large storage pits were filled with wheat or barley (Bayer 1928). Shoelast shaped stone hoes, as well as grind-stone and pestles, have been found there. Botanists have identified wheat, barley, millet, oats, rye(?), and pulses among the plant remains. Hazelnuts, cherry stones, and carbonized dried apples give evidence of gathering activities. Cattle led the inventory of domestic animal bones, followed respectively by ovicaprid, pig, and horse. Cattle pens have been discovered, areas 500-600 meters square, enclosed by ditches with crude fencing indicated by traces of branches and various-sized post-sockets within the ditch (Sochacki 1970:321, 329). Local food production was heavily supplemented by fishing and hunting (shown by fish hooks and deposits of fish bones, and by bones of bear, boar, aurochs, roe deer, wolf, fox, and hare).

Baden cemeteries show the typical Kurgan practice of human and animal sacrifice, the latter by the presence of dog, horse, and cattle bones with interments, the former by multiple burials, typically a couple and children. Grave goods of the wealthy include braziers and models of vehicles (Fig. 10). At Alsónémedi and Budakalász near Budapest, several ox-teams had been sacrificed at the burials. At Budakalász, a cenotaph included the clay model of a four-wheeled vehicle not unlike the one in an inhumation burial at Szigetszentmárton, south of Budapest. The burial of a cart with the dead of high social status was customary in later prehistoric and early historic times. Thus, the Alsónémedi, Budakalász, and Szigetszentmárton graves may be interpreted as graves of men of importance in the community. At Vörs in Hungary, a male individual wore a copper diadem with prongs in front.

The physical type of Baden was predominantly Mediterranean, as was to be expected from the Vinča and Lengyel substrata. Another, Proto-European C, or "steppe type," was identified. A certain facial flatness of some individuals seems to reflect eastern relations. At Budakalász the steppe type predominated, while at Alsónémedi the Mediterranean was mixed with a European brachycranial type (Nemeskéri 1956; Toth 1968).

The Old European symbols recur in the Baden culture on the bird vases, on the winged anthropomorphic urns, and on other fine-quality ceramics decorated with the breast motif and panels of chevron, ladder, and net patterns. The finishing of ceramics by burnishing and channelling are the last flutter of the Old European way in conflict with the new Indo-European ideology reflected in the rows of pits, zigzags, and solar patterns on beakers, braziers, tureens, breast-plates, and wagon models (Fig. 11). The Baden complex clearly represents an amalgamation in progress of two cultural systems with contrasting economies, ideologies, racial types, and modes of living – the recently arrived Kurgan conquerors and an Old European (Vinča, Funnel-necked Beaker, and Lengyel) people.

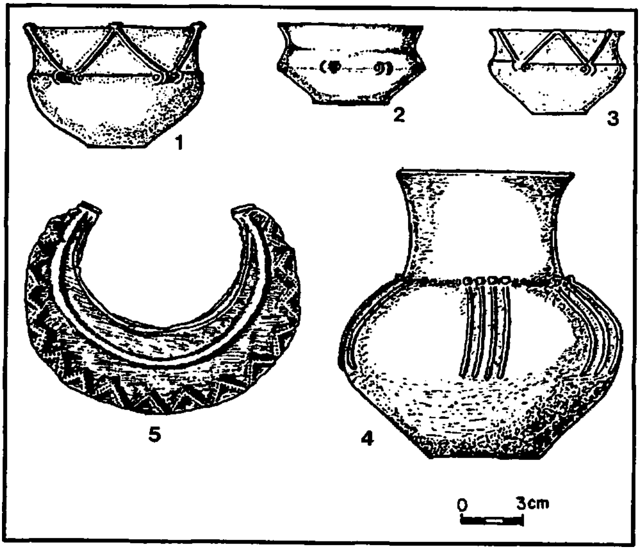
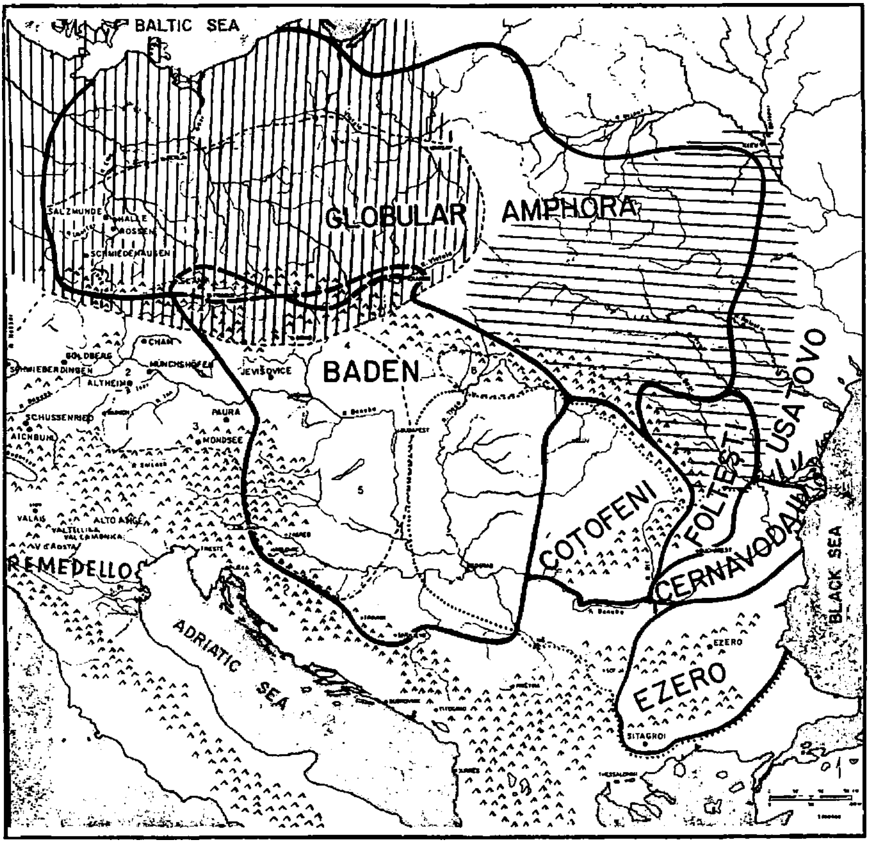


Fig. 11: Baden pots and a copper breast plate found in a stone cist grave at Velvary, Bohemia. Vases (upper row) have tubular handles used for suspension of the vessel (note: strings are shown in relief.) Breast plates of Velvary type reappear on stelae: Figs. 20, 22. (*After* Moucha 1960.)

The Globular Amphora Culture in the Northern European Plain Between Central Germany and East Romania

The Globular Amphora culture emerged on the northern European plain and north of the Carpathians – the present territories of central Germany, Poland, Volhynia, Podolia, and Moldavia – after the middle of the 4th millennium BC. It is known from hundreds of graves and from a few seasonal camps on sand dunes, small villages, and hilltop sites. (Map 2). The Globular Amphora culture was preceded by the Funnel-necked Beaker ("Trichterbecher" or TRB*)*, a culture affiliated with the Western European Neolithic (clearly non-Indo-European in its cultural system), by the Baalberge-Salzmünde group of central Germany and Bohemia (a group considered by many archaeologists as southern TRB, but in my view probably partially Kurganized in the wake of Kurgan Wave #1), and by the Cucuteni (Tripolye) culture in the western Ukraine and Moldavia.

There is a complete congruence between the burial rites of the Globular Amphora people and those of the Kurgans of the Mikhajlovka I stage of the Maikop culture in the North Pontic region: mortuary houses built of stone slabs, cromlechs, and stone stelae, engravings on stone slabs, ritual burial of horses, cattle, and dogs; also human sacrifice in connection with funeral rites honoring high-ranking males (Fig. 12).



Map 2: The distribution of the Globular Amphora culture and contemporary groups – Coţofeni, Folteşti, Usatovo, Cernavoda II, Ezero (solid black line) at c. 3400-3000 BC and their substrata. The substratum culture groups: Funnel-necked Beaker (TRB) (vertical lines); Cucuteni-Tripolye (horizontal lines); Karanovo (Gumelniţa) and Petreşti (dotted lines), with the extension into Yugoslavia and eastern Hungary known as Salcuţa IV (or Hunyadi Halom" in Hungarian). Dashed line indicates territories influenced by Kurgan Wave #1 with the elements of displaced Lengyel and Vinča cultures: 1) Baalberge; 2) Altheim; 3) Mondsee; 4) Bajč-Retz (Furchenstich); 5) "Balaton-Lasinja" II, III; 6) Lažňany, the last remnant of the Lengyel culture in eastern Slovakia.

The Globular Amphora assemblage of vases which accompany the dead includes a globular pot – the typical vessel for which the culture is named, *i.e.*, the amphora, with flat or rounded base, with or without two or four small handles above the shoulder for suspension – a tureen or wide-mouthed beaker, and, occasionally, a cup (Figs. 13, 14). The cord-impressed, incised, or stabbed decoration is restricted to the neck or shoulder. The clay is tempered with crushed shells and some sand or vegetable matter. In shape and construction, this pottery, particularly that from Vohynia and Poland, is much the same as that from Mikhajlovka I (Fig. 13).

A classed social structure and the dominant position of men is demonstrated by graves containing, in addition to the rich grave goods, astounding numbers of sacrificed human beings and animals (Nosek 1967). In such graves the adult

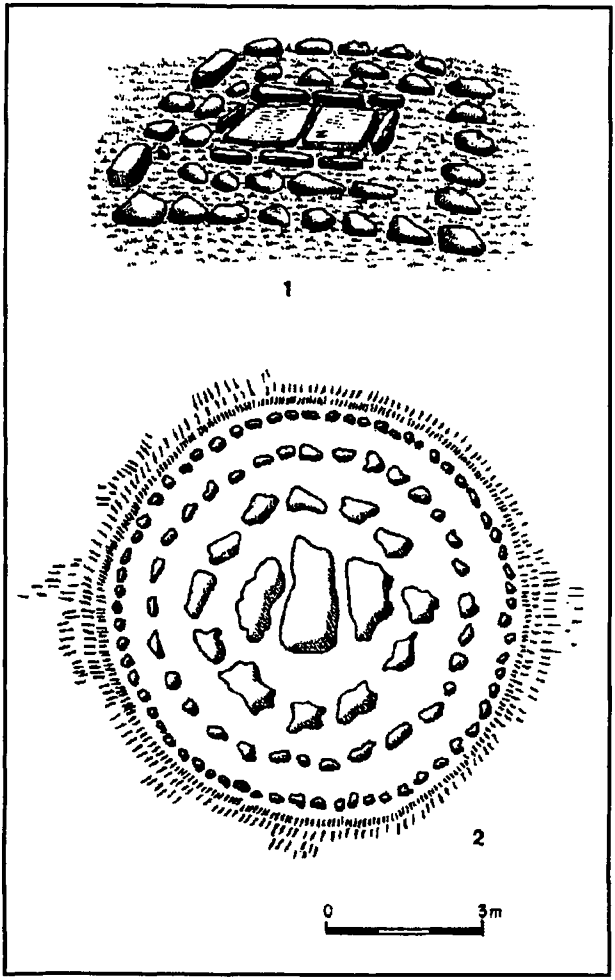


Fig. 12: Stone cists surrounded with cromlechs (rectangular and round). Archival plans. 1) Osowiec, district Mogilno; 2) Trzebcz, district Chełmno, Poland. (*After* Wiślański 1966 and Nosek 1967.)

male occupied the central position in the stone cist and was accompanied into the afterlife by family members, slaves(?), oxen, horses, dogs, boars, and other game animals. These extraordinary graves contained from three to ten human skeletons buried at the same time. The sex, age, and the position of the skeletons suggest that one or more young children, an adult female (wife?), and one or two attendants were put to death (or voluntarily immolated themselves) to accompany the father, husband, and master to the other world. The important male skeleton is usually found at one end of the cist grave, while two or more other individuals are grouped at the opposite end; or else probably as immediate family members, they are beside him in the same room, and the other escorts are within the porch or small room of the mortuary house. At Klementowice in eastern Poland, the male skeleton which lay in the center of the north end of the stone cist was equipped with as many as thirty-five artifacts (thirteen vases, four flint axes, three daggers of boar tusk, and the jawbone of a boar). A young woman (his wife?), seated upright in the southern end of the cist, was equipped with only a small amphora; bones of an old man missing the skull were in the southeastern corner of the cist. Generally, rich male graves contain only one female skeleton and one or two skeletons of children. One exceptional instance is the cist grave at Vojtsekhivka in Volhynia containing a male skeleton flanked by two women and four children, a young man and a woman at his feet (Levitskij 1929).

In a number of cases, skeletal remains of adult males (servitors?) and children are found in separate stone cists together with sacrificed animals. The sacrificed human beings are headless or without legs, or are represented by heads alone. Often a double-pointed bone spear is found among the bones of the sacrificed, and suggests the means of sacrificial killing. At many Polish sites a draught team of two oxen is buried near cists with a human skeleton, as in the

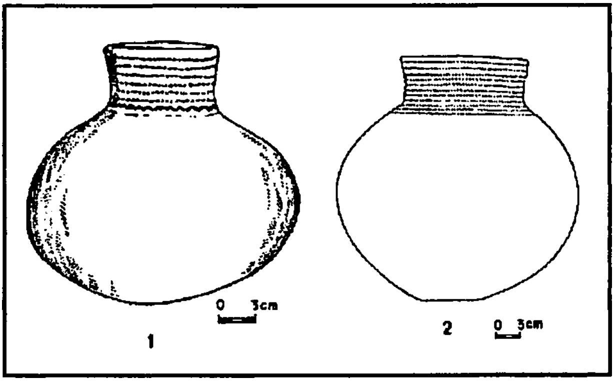


Fig. 13: Globular amphorae decorated with cord impressions. 1) Kalsk, district of Swiebodzin, Poland, H 185 cm. (*After* Nosek 1967.) **2) Mikhajlovka hillfort, lower Dnieper, H. 26 cm.** (*After* Lagodovska, Shaposhnikova, and Makarevich 1962.)

Baden complex (Fig. 15/A). They lie sidewise, with contracted legs, foreheads almost touching (buried yoked?). Bone discs with a star design were around their necks (Fig. 15/B). Near one such pair at Pitkutkowo in central Poland were two clay drums in a large dish. Other animal graves contained only cows or only horses, or a mixture: a cow, a pig or boar, a stag, fox, a chamois. Pits filled with black-stained earth, perhaps remains of blood, have been noted at the animal burials. Sacrificial pits filled with animal bones have also been discovered, some displaying an interesting arrangement. At Jordanów in Silesia, a stone-slab lined rectangular pit which contained bones of cows, dogs, pigs, and goats, had dog skulls in the corners. Above the cist lay the skeleton

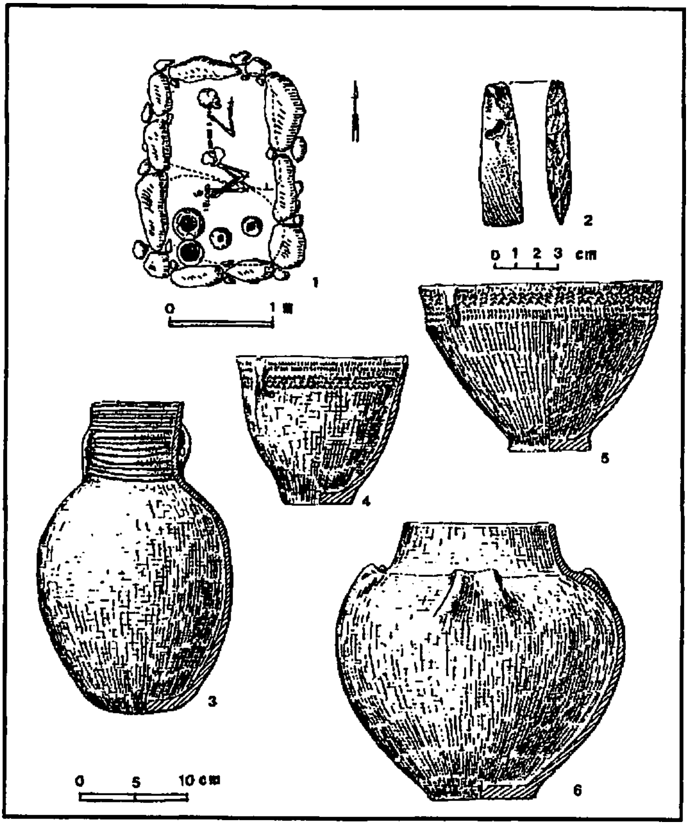


Fig. 14: Stone cist grave of the Globular Amphora culture. The man lying on the left side in a contracted position (1) was equiped with four pots (3-6) and an axe made of banded flint (2). Przybysław, district of Inowrocław, western Poland. (*After* Wiślański 1966.)

of a cow with horns deliberately broken, and above that the bones of an eight-year-old child and the skeleton of a dog. The enormous number of human and animal sacrifices has analogies only in the Pontic area and in Kurgan-dominated cultures, such as Baden. The sacrifice of people and animals on this scale was unknown in the TRB culture.

The religious and social traditions of the Globular Amphora culture demonstrate that the grave structure was unrelated to that of the TRB culture. TRB graves contain extended burials and are arranged in long barrows or megalithic passage graves; occasionally they underlie Globular Amphora graves. The religion of the TRB people is related to that of the megalith builders of western Europe and the Mediterranean region. Connections with Old Europe – where the ram was an animal sacred to the Bird Goddess – is indicated by the prominence of the ram in TRB symbolism. This trait is noteworthy inasmuch as cattle, not sheep, formed the base of the TRB stock-breeding economy.

The temporal increase of Globular Amphora sites on the southeastern Baltic Sea coast is probably attributable to the pursuit of amber to which the culture attached great ideological importance. Its golden hue was symbolically significant to these sun-worshipping people. Amber discs without or with solar carved designs (star or cross pattern) are found in important male graves (Fig.

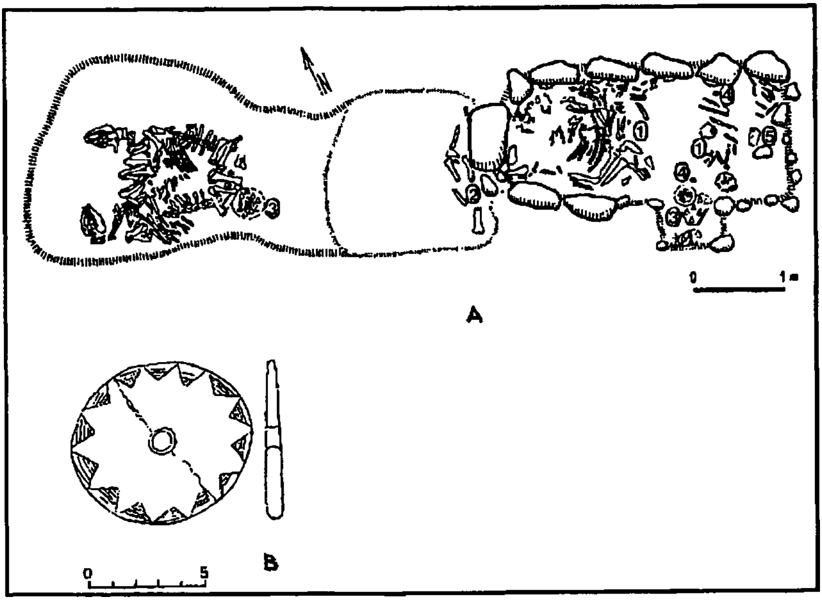


Fig. 15: A) An oxen-team (left) buried next to the stone cist with human skeletons (right). 1) Human bones; 2) sacrificed animal bones; 3) vases; 4) rectangular in shape; 5) axe or banded flint. Zdrojówka, district of Koło, Poland. (*After* Nosek 1967.) **B) Bone plate with a star design found attached at the ox forehead. Brześć Kujawski, district of Włocławek.** (*After* Wiślański 1979.)

16). The largest amber sun disc, 12 cm. in diameter, was discovered in a rich cist grave at Ivanne near Rovno in the northwestern Ukraine, some 600 km. distance from the amber source area in East Prussia or Lithuania (Sveshnikov 1973). On the disc an engraved scene shows schematic human figures with upraised arms and a schematic animal (horse?). The engraving is closely related in style to those on Crimean stone-cist walls and stelae.

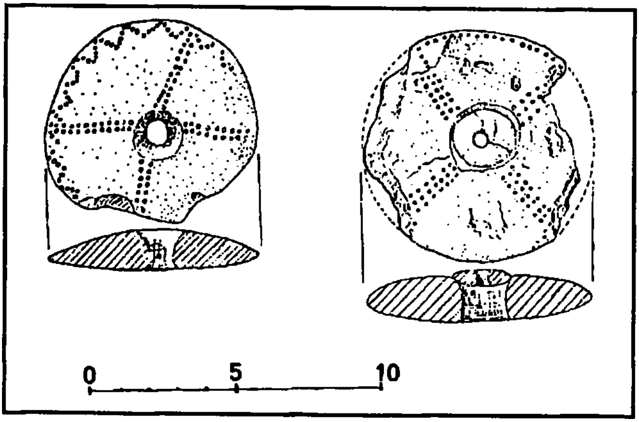


Fig. 16: Discs of amber with engravings. Found in stone cists as a gift to an important male at: 1) Szwarcenowo, district of Nowe Miastro Lubawskie; Kolonia Dębice, district to Włocławek, Poland. (*After* Wiślański 1966.)

The Globular Amphora people were herders who practiced limited transhumance. They lived in small groups, a mode conducive to the grazing of herds over wide ranges, and bred cattle, horses, pigs, dogs, and sheep/goats. They also hunted, fished, and gathered wild plants. Their pattern of semi-nomadic pastoralism is documented by seasonal settlements of two or three rectangular semi-subterranean huts or above-ground timber houses (Fig. 17). Hillforts and permanent settlements apparently constituted the cultural focus for a tribe or clan.

Rare agricultural tools – generally stone hoes with head perforated to receive a shaft – and quern stones indicated limited farming. The evidence of domesticated plants comes from impressions of barley, wheat, and pulses found in clay daub (storage pits common to Funnel Beaker sites never occur). Finds of carbonized acorns indicated their use also, either for human consumption, or as fodder for the swine. However, agriculture seems to have been only supplementary to an essentially stockbreeding economy. Cattle were of paramount importance. Cattle bones in virtually every grave show that this domestic animal played the foremost role in belief as well as in the economy. Next in importance were pigs; almost every grave of an important male contained a boar mandible.

Frequently present in the grave goods are the two major wood-working tools: a trapezoidal flint axe, quadrangular in cross-section, and a flint chisel. These stone tools were replicates of a pair of metal tools – the sharp flat axe and the chisel. In the west, where metal tools were very scarce, flint was universally cherished, and the flint industry was intensive. At the impressive flint mine at Krzemionki in the upper Vistula area at Opatów, some thousand shafts bear witness to the quantities of banded flint that was removed. It was the primary choice for the axes and chisels of the Globular Amphora people which they manufactured almost exclusively of this kind of flint. Other tools – arrowheads, points, knives, scrapers – were made of gray or chocolate flint from other sources. Bone was used for awls and needles, as well as ornaments and ceremonial items, such as the so-called "belt clasps" with incised minute geometric design.

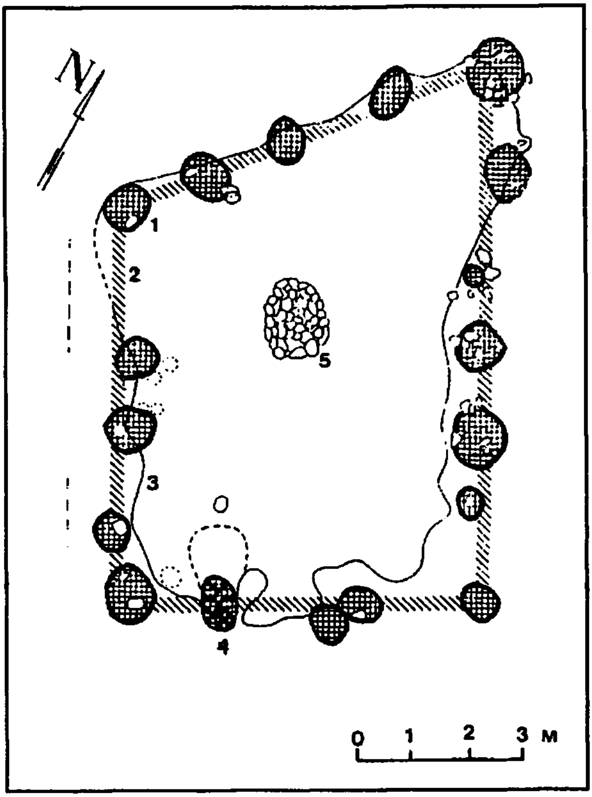


Fig. 17: Plan of a Globular Amphora dwelling, 1) post-holes; 2) outline of the walls; 3) contours of a dwelling pit; 4) hearth; 5) stone hearth in the center. Biedrzychowice, district of Prudnik, Poland. (*After* Wiślański 1970.)

There are still many lacunae in our knowledge of the Globular Amphora culture. The physical type of the population, for instance, is hardly known. In Romania, only seven skeletons were examined. The type was characterized by Olga Necrasov as "attenuated protoeuropid with some brachylization" (Necrasov 1980). The broad-headed skulls from the stone cist graves in Volhynia are very similar to those from Romanian Moldavia. The skulls from Poland were also broad-headed. Multivariate comparison made between seventeen male skulls from central Germany, Czechoslovakia, and Poland by Schwidetzky has shown clear affinities with the substratum (Funnel-necked Beaker) population. Although the number of individuals examined is very small and no face measurements are known, it is interesting to note that Schwidetzky sees a certain gradation from east to west within the Globular Amphora population, *i.e.*, breadth measurements decreasing from east to west. The eastern groups are very similar to the Kurgan type; the western, to the central German TRB people (Schwidetzky 1980). As to how much population influx there was and how much crossing of various types took place – the answers to these questions lie in the future.

At any rate, it is apparent even at this stage of research that the emergence of the Globular Amphora culture in the North European plain is a phenomenon crucial to the question of the Indo-European origin. This culture was a decisive factor in the formation of the succeeding Corded Pottery culture which carried the Kurgan tradition to Denmark and across the North Sea to as far as eastern Ireland (see Herity 1981), to southern Sweden and Norway, to the East Baltic, and to central Russia (as the "Fat'janovo" branch). And finally, we must bear in mind that the fundamental components of the Globular Amphora culture – social, religious, and economic – link it to the North Pontic area and to the local remnants of Kurgan Wave #1 (the Baalberge-Salzmünde group in central Germany and Bohemia). The fact that the Globular Amphora culture is more homogenous than the Baden suggests that if these people were indeed Indo-European speakers they completely succeeded in subverting the indigenous population or in converting them to their own creeds, customs, and language.

Indo-European Symbolism on Stone Stelae

With Kurgan Wave #2, *c.* 3400-3200 BC, a new set of symbols engraved on stone stelae emerged in Europe as far west as the Italian and Swiss Alps. The stelae have close analogs north of the Black Sea, particularly in the Crimea and the northern Caucasus. Their graphics differ sharply from those of the French and Italian statue-menhirs which portray the female goddess, usually owl-faced, and her characteristic symbols. The Kurgan stelae display solar symbols; masculine paraphernalia: daggers, halberds, axes, bows, quivers and arrows, belts, breast-plates, double-spiral pendants; male animals: horses, stags, he-goats; vehicles, and ox teams pulling a plough. They are a prime source for the reconstruction of mythical imagery, not to speak of their great value in the accurate representation of hilted daggers, shafted halberds and axes, bows, quivers, vehicles, belts, and breast-plates – objects rarely preserved in graves.

About eighty monuments with engravings of the new symbols, stelae and large stones, in the Alpine valleys (Alto Adige, Valtellina, Valais, Val d'Aosta) of northern Italy and central Switzerland witness the advent of a new religion. Together with the North Pontic stelae of the Maikop culture and related stelae from Romania and Bulgaria (where they also spread with Wave #2), they number over 500.

Outstanding examples were discovered at Petit-Chasseur, Sion in Valais, Switzerland (Fig. 18), Valtellina, Valcamonica, and the Alto Adige valleys of Italy (Figs. 19-22). Their preservation in the mountain valleys is probably due to the absence of agricultural activities during past millennia, whereas in other areas they were destroyed or used for construction work. The systematic research of rock engravings by Emmanuel Anati in North Italian Alpine valleys during the last decades should be credited for the accumulation of the information (Anati 1967, 1972, 1975).

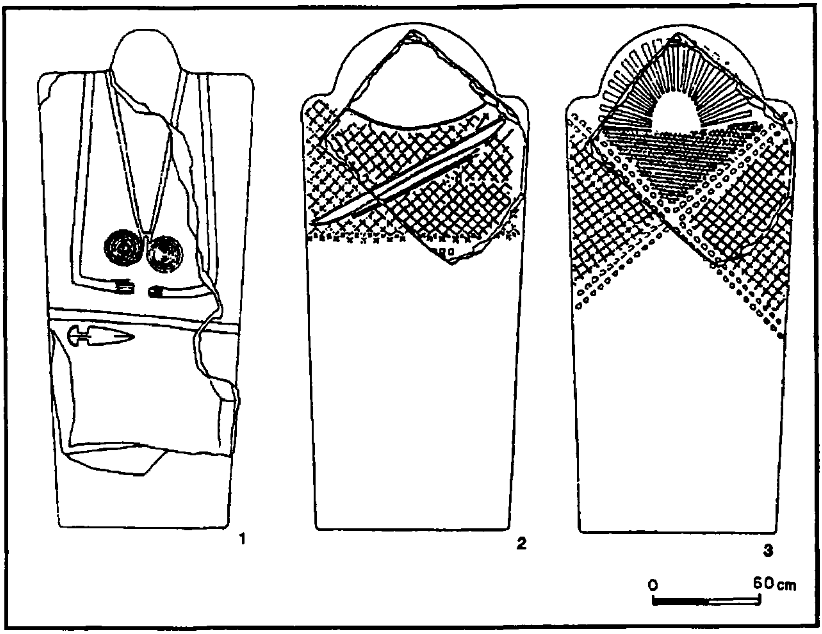


Fig. 18: Roughly anthropomorphic stelae from Petit-Chasseur, Sion, Valais, Switzerland. The stele on the left shows a double-spiral pendant, belt, and geometric design dagger; a bow and arrows are shown on the middle one; and a solar symbol is depicted on the stele on the right. Reconstruction by Rene Wyss (preserved parts are indicated). (*After* Gallay and Spindler 1972.)

The chronology of the stelae was vague before the discovery at Petit-Chasseur associated with a megalithic cist monument, M VI. This is stratigraphically ascertained as succeeding the local Cortaillod culture and preceding the Bell Beaker. The radiocarbon date places the Petit-Chasseur stelae in the period of the 34th-33rd centuries BC (Gallay 1974). This date corresponds to the formation of the Ezero, Baden, Coţofeni, and Globular Amphora complexes following Wave #2. Stone cists, stelae, and the new set of images are attested in all these composite cultures of indigenous and Kurgan elements. On the basis of stylistic study and the comparison of weapon types with those of the Remedello culture in the River Po Valley of northern Italy, it is assumed that the stelae belong to the Remedello culture group. Petit-Chasseur stelae belong to the Saône-Rhône culture group.

The engravings on the stelae reveal a great deal about the new ideology. In fact, they constitute the richest source for the study of the earliest Indo-European symbolism and images of gods. The symbols are characteristically grouped, making possible the study of their interrelationships. Their consistent association on the roughly anthropomorphic stelae leaves no doubt that the engraved weapons, animals, and solar symbols are linked; and their concurrence is not accidental. The horse-head scepters and decorative sun symbols on pots which appeared in Europe with Wave #1, a millennium earlier, scarcely suffice for a reconstruction of mythical images (except the importance of horse and sun in symbolism). The engraved stelae beginning *c.* 3400 BC have opened new insights into how different the ideology of the new arrivals was from that of the indigenous European population.

The following symbols are recorded: 1) solar sign (a circle, radiating sun, and a circle with groups of long rays) engraved in the area of the head (Fig. 18/3; Fig. 20; Fig. 21); 2) breast-plate (a semi-circle of multiple concentric lines); 3) double-spiral pendant, one or a pair on the chest or at the solar sign (Fig. 18/1; Fig. 20); 4) a circle at either side of the radiating sun (Fig. 20); 5) hilted dagger: one, two, five, seven or more shown in the middle part of the stele (Fig. 18/1, Fig. 19; Fig. 21); 6) shafted halberd, one or many (Fig. 19, Fig. 21); 7) shafted axe, one or more (Fig. 19; Figs. 21-24); 8) belt of parallel lines (Fig. 21/2: beaded?) or of zigzag or diamond pattern (woven?); 9) four-wheeled vehicle, shown below the belt (Fig. 19); 10) bow, quiver, and arrows (Fig. 18/2); 11) footprints; 12) plough pulled by two yoked oxen, on the lower part of the stele (Fig. 22); 13) horse(s), stag(s), he-goat(s) (Figs. 21, 22).

[For figure see Fig. 29, p. 167 above.]

Fig. 19: Stele with engravings of multiple daggers, axes (or halberds), belt, a four-wheeled vehicle pulled by a pair of oxen. Head not preserved. On top: necklace or chain (perhaps with a pendant suspended originally; the dagger shown as if attached to the necklace is probably superimposed). Lagundo, Alto Adige, northern Italy. (*After* Anati 1972.)

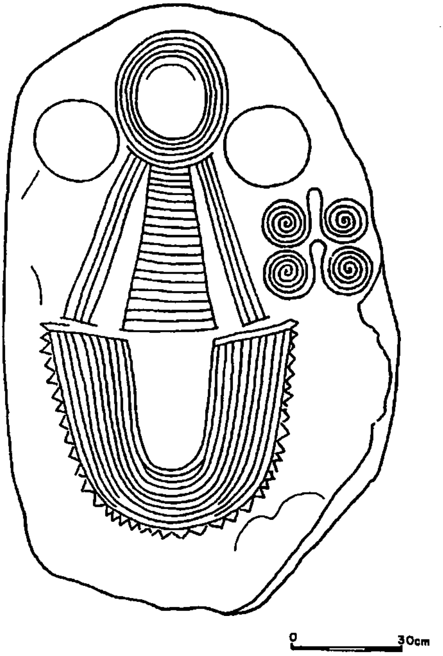


Fig. 20: Stele from Caven at Teglio, Valtellina, northern Italy, engraved with a group of solar/sky symbols: radiating sun with two circles on both sides, two double-spiral pendants, and breast-plate. (*After* Anati 1967.)

The content and associations of the symbolic groups are of particular interest. The most frequent are the solar groups: the radiating sun, the circle on either side of the radiating sun, the double-spiral pendants, and the breast-plate (Fig. 22). This group of symbols is further associated with the belt, daggers(s), halberd(s), horse(s), stag(s), ploughing scene, and a vehicle (Figs. 21, 23, 24). To the specialist in comparative Indo-European mythology such combinations of symbols will certainly recall the image of the God of the Shining Sky, who bestows progeny and raises vegetation. This deity is known in various Indo-European groups from early historic records and is still extant in folklore: the Indic Mitra, Baltic Dievas, Roman Dius Fidius, Janus and Mars, Celtic Lug (called "Sun Faced"), Germanic **Tiwaz* (from **deiuos),* Anglo-Saxon Tiw, German Ziu, Islandic Tyr, northwestern Slavic Jarovit-Svantovit, and others.

[For Fig. 21/1 see Fig. 31, p. 168 above. For Fig. 21/1 and Fig. 30, p. 167 above.]

Fig. 21: Two compositions engraved on rocks (stelae) from Valcamonica, northern Italy, including a solar symbol (in place of the head), halberds, daggers, a belt, and a horse and stag. 1) Cemmo; 2) Papardo. Rock c. 0.60 x 1.20 meters. (*After* Anati 1972.)

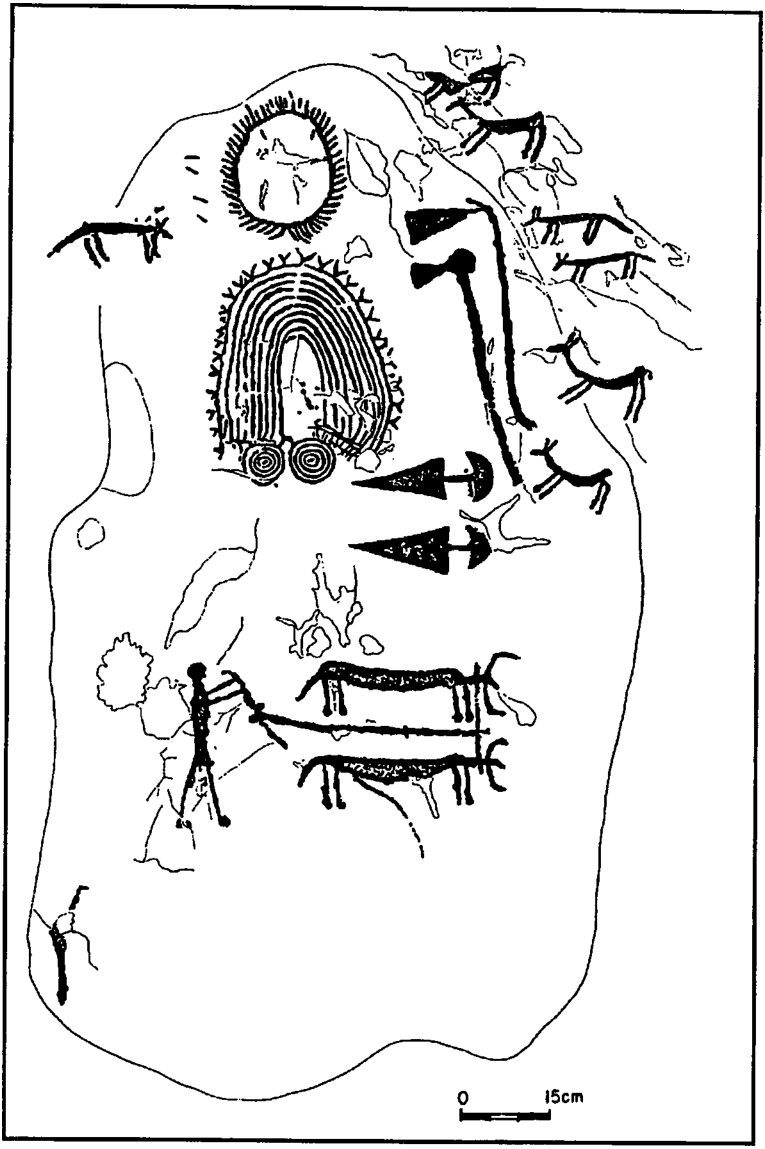


Fig. 22: Stele from Bagnolo, Valcamonica, northern Italy (0.80 x 1.30 m.) engraved with a radiating sun (head), a breast plate (upside down), perhaps a symbol of shining (daylight) sky, a double-spiral pendant (a symbol of morning and evening light or summer and winter light?), two daggers and two axes with long shafts, a ploughing scene with a pair of yoked oxen, and seven animals (unclear what kind: horses, dogs, or deer?). (*After* Anati 1975.)

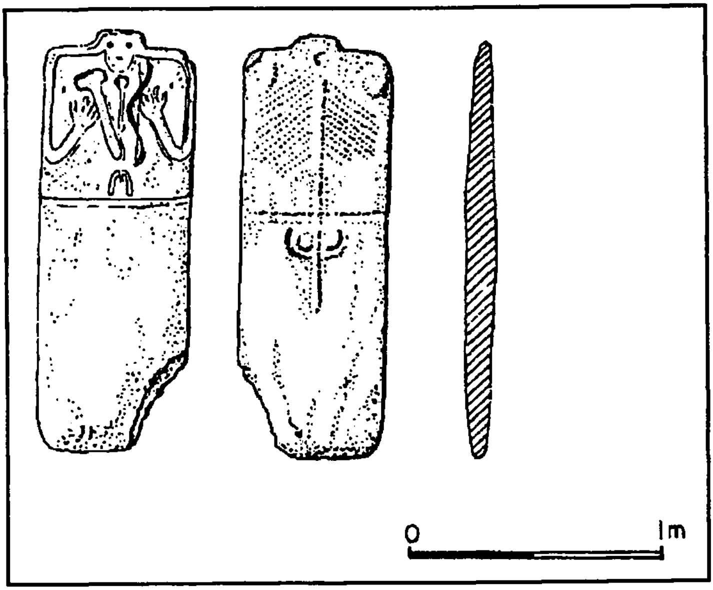


Fig. 23: Stele from Natalivka, district of Aleksandrovka, lower Dnieper basin. A roughly human-shaped figure with head and schematic arms indicated is shown to hold an axe, a mace, and a bow. On the back: a geometric design on the upper part and (probably) bull-horns below the belt. (*After* Danilenko 1951.)

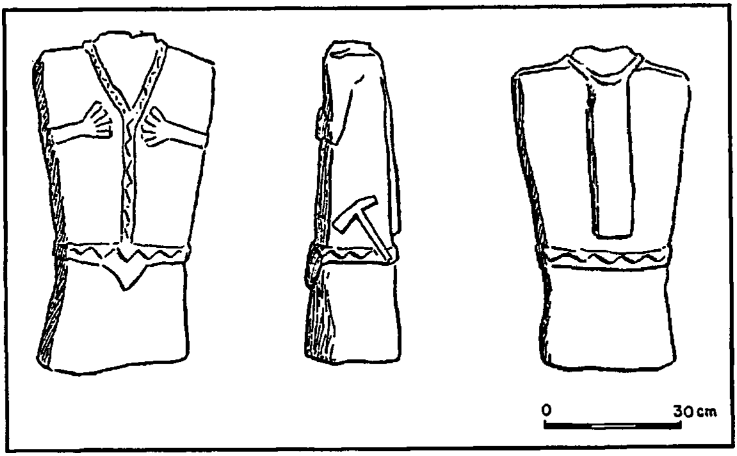


Fig. 24: Stele from Baia de Cris, district of Hunedoara, Transylvania, Romania. A shafted axe is shown attached at the belt on the side. Head is lost, arms are indicated. In front, a triangular collar extending down to the belt; on the back, a thong hangs attached to the collar. (*After* Foca, *Sargetia*, 4.)

This god is associated with the daylight. His image is "shining" like the effulgent sky and his weapons and animals are shining. Mithra's epithet 'hvaroax̌šna', "endowed with own light," was identified with the first light of the morning, the daytime sun, and with the sun in summer and autumn. His powers are transmitted by his weapons, the dagger (or sword, in later prehistory and early history); by his animals, the stag and horse; and by the shining vehicle in which he travels. As protector of vegetation, particularly of the grain, he is associated with ploughing and his pair of oxen. The presence of a Scythian sky god was symbolized by his dagger 'akinakes' (instead of represented in human form). The weapon as depository of this god's power is familiar also in other Indo-European areas. The northwestern Slavs of the 12th century AD kept the dagger, sword, or shield of the God in their temples instead of an anthropomorphic statue. Equally symbolic of the God was the white horse or the stag; their image was an incarnation of his power and a manifestation of the God.

Other compositions and groupings probably represent other Indo-European deities. The axe is connected with the Thunder God; the bow, quiver, and arrows may also be his (Figs. 18/2, 23, 24). The footprints may refer to any of the major gods. Present knowledge of stelae would indicate that the majority of them represent the God of the Shining Sky. In Indo-European mythology, the image of this god is linked with kingship. The erection of stelae, therefore, may have marked the death of important personages.

Summary

The hypothesis of an incursion of North Pontic (Maikop) people into Europe is based on archaeological evidence of a sudden transformation of the Old European culture which cannot be explained as a product of continuous socio-economic and religious development. What is manifest after the middle of the 4th millennium BC seems to be a rapid process of amalgamation of two very different culture systems. The following are the clearly visible phenomena of cultural change:

1. The Old European culture groups which survived for a millennium after Wave #1 – the Cucuteni in the western Ukraine and northeastern Romania, the Polgar in northeastern Hungary and Transylvania, the TRB in the northern European plain, the Cortaillod-Lagozza in Switzerland and northern Italy – gradually cease to exist. Other complexes replace them, although borderlines do not precisely coincide with those of the Old European groups. Among them: Usatovo, Gorodsk, and Folteşti in the territory formerly occupied by the Cucuteni (Tripolye) civilization; Globular Amphora – partly in the Cucuteni area, mostly in the territory of the TRB culture; the Ezero and Coţofeni – in the former Karanovo area; Baden – in former Vinča, Lengyel, Polgar, and southern TRB area; Remedello in the River Po territory and the Alpine valleys – in the former Cortaillod-Lagozza area.

2. North Pontic burial rites and symbols are suddenly everywhere – round barrows, stone cists, stelae; a set of new symbols, including representations of male gods – coincident with the cessation of the Old European florescent ceramic art, the cult paraphernalia, temple building and all intimation of Goddess worship.

3. Habitation pattern and architecture are different: towns and large villages cease to exist; hillforts are omnipresent as centers of wealth and power. Apsidal, free-standing houses, probably headquarters of the chieftain, are typical of hillforts. Semi-subterranean peasant huts with interior hearth replace in most areas the solidly built houses of split planks or clay with two or three rooms and bee-hive oven.

4. The pastoralism of the economy increased and with it the number and importance of cattle and horse. Their prominence in the cult reflects their economic value: oxen are used in ploughing and to pull vehicles. Horses were ridden and used in warfare.

5. A new metallurgy is manifest – hard metal of alloyed copper-arsenic, and a new repertoire of tools, and weapons, dominated by the flat axe and dagger, typical of the Caucasus and Transcaucasia. Old European foci of metallurgy are abandoned.

6. A new physical type is discernible: the robust Protoeuropids contrast with the indigenous Mediterranean populations. In the ensuing anatomical mélange, the degree of change is most visible in the east, at the point of initial impact, and lowest in the west.

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Primary and Secondary Homeland of the Indo-Europeans
comments on Gamkrelidze-Ivanov articles*

My comments on Gamkrelidze's-Ivanov's articles mainly concern archaeological evidence regarding the problem of the Indo-European homeland. I find that the authors' usage of archaeological materials is too superficial, the chronology used in many cases is incorrect, and that much of the published information is unknown. I shall focus on the following questions: 1) Can the Proto-Indo-European culture be sought in the area between the Balkan Peninsula and northern Mesopotamia as the authors suggest? 2) Is the south-north expansion (from the Transcaucasian to Ciscaucasian and the Black Sea area) possible? 3) Is the Kurgan culture of the Eurasian steppe zone a parent culture only of European Indo-Europeans, even excluding the Greeks?

Old European-Old Anatolian Neolithic Culture is not Proto-Indo-European

The thesis that the Indo-European homeland should be the area which includes southeastern Europe, Anatolia, Transcaucasia, and northern Mesopotamia cannot be accepted for a simple reason: the great neolithic civilization of this region is the antithesis of all the characteristics understood as Proto-Indo-European, which have been reconstructed with the help of comparative linguistic and mythological research. To say that these cultures which date to the 7th, 6th, and 5th millennia (not to the 4th millennium as the authors suppose) were Proto-Indo-European is to ignore the essential features of these highly advanced cultures: their economy, architecture, art, religion, and social structure. From the middle of the 7th millennium these people practiced a full-fledged agriculture with all cereals known (barley, several kinds of wheat, rye, oats, lentils, peas, vetch) and all domesticated animals except the horse.

These peaceful people had large villages consisting of spacious rectangular houses built of mudbrick or timber, with solid floors of beaten clay or of split timbers. From the end of the 7th millennium two-room houses and temple models in clay speak for a great richness and advancement in architecture. From *c.* 5000 BC two-story buildings are known. Wall paintings begin at 7th millennium Çatal Hüyük. In all of the cultures of these three millennia a

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matrilinear social structure and a gynocentric religion can be reconstructed. There was no interest in weapon production; instead, sculptural and ceramic arts flourished. There were no horse nor fighting from horse-back, no thrusting weapons, no daggers or swords or spears (except at the very end of this civilization in areas where horse-riding Kurgan people first appeared). In addition to temple building, the pantheon of goddesses and gods and cult paraphernalia is richly evidenced. Their symbolic structure has nothing to do with the symbols and ideology of the Indo-Europeans. The religion and symbols suffice to prove that the Old European and Old Anatolian as well as Mesopotamia Halafian cultures were non-Indo-European. (This problem is discussed by the author in Gimbutas 1989).

When they refer to the cultures between the Balkans and Mesopotamia, the authors use too low a chronology. For instance, the Halaf culture is set within the 5th and 4th millennia BC and is synchronized with Çatal Hüyük, which is definitely placed within the 7th millennium BC. This is just one example of the vagueness of the knowledge of chronology throughout the article. It is even not clear where the authors use calibrated or uncalibrated radiocarbon chronology and where they use historical dating or an approximate typological or stratigraphical chronology. In speaking of a homeland, a firm chronology is of primary importance.

Neither archaeology nor linguistic evidence support the hypothesis that the Proto-Indo-European culture was in the stage of developed agriculture and that this culture was characterized by advanced pottery. The linguistic data suggests poorly developed agriculture and ceramic art.

The hypothetical Indo-European proto-language did know of Einkorn or Emmer wheat, barley, oats, or rye. The word **i̯eu̯o-*, considered by the authors to mean "barley," originally was a name for any sort of cereal used in the manufacturing of intoxicating beverages (in modern Lithuanian, *javai* is a general term for cereal and is never understood as "barley"). It is questionable that PIE **p/h/ur-* ever meant "wheat," as the authors have contended; it apparently meant "wheat grass," since in the majority of Indo-European languages this word means "couch-grass, sedge, spelt, rye-grass, or winter wheat." Thus, except for millet, a "ground" cereal (**mel-* 'to grind, crush, pound'), **i̯eu̯o-*, a cereal used for fermentation, and **p/h/ur-*, a grass or spelt wheat, there are no other well-attested words for cereals. These common words do not reflect the full-fledged agriculture as was practiced between the Balkans and Iran in the 7th, 6th, and 5th millennia BC.

Common names for rye, barley, and oats are found only in the European branch of the Indo-European languages. **Rughis*, "rye," is known in Baltic, Slavic, Germanic, and Celtic. The word for "oats," with the root **aw-*, is known in Slavic, Baltic, and Latin. "Barley" apparently designated "food derived from cereals," as Latin, Germanic, and Slavic forms suggest.

Some names are common to Indo-European speakers of southern Europe: beans, peas, vetch, and poppies are attested in Latin, Albanian, and Greek. All these plants are well-known from the Neolithic in southeastern Europe, and it is quite possible that their names were later inherited by the Indo-European speakers. The name for flax (**linum*) is known in Latin, Greek, Slavic, Baltic, and Germanic. The word for hemp (**kannabis*) is preserved in Greek, Albanian, Germanic, Slavic, and Baltic, but it is not known among eastern Indo-European speakers. The above suggests that Indo-European speakers in Europe were acquainted with many cereals and pulses as well as with flax and hemp. Some names are common to a larger group of languages and therefore may hark back to the formative period as an after-effect of Kurgan Wave #2, to the second half of the 4th millennium BC. Pulses were apparently inherited from the substratum population of southeastern Europe. It is clear that the agricultural terminology was enriched as Indo-European language moved west.

Agriculture was minimal in the proto-culture (in my understanding, a pastoral, semi-nomadic Kurgan culture of the south Russian-south Siberian steppe, which well corresponds with the linguistic data). However a considerable agricultural terminology in the European branch of the Indo-Europeans is suggested by lexical studies. It follows that the increase of agriculture is synchronic with a decrease of nomadism and increase of settled life after the incursion of the Proto-Indo-Europeans into Europe where agriculture had a millennial tradition.

The authors state that "the extensive Proto-Indo-European terminology for transport vehicles, harnesses, and their parts, as well as "horse," are grounds for locating the original Indo-European homeland in the 4th millennium BC within the area indicated, from the Balkans to as far as southern Turkmenia" (Gamkrelidze and Ivanov 1985a:17). The Neolithic cultures of this area, as mentioned above, were in possession of all domesticated animals except the horse. This is not the region where the horse was first domesticated. The horse was introduced to Europe by the Kurgan people in the second half of the 5th millennium BC and in the 4th millennium into Anatolia. What the authors say about the domestication of animals in Europe (Gamkrelidze and Ivanov 1985a:15) is a misunderstanding. A few examples: "sheep are not known in Europe until the 1st millennium BC"; "there was absence of wool in neolithic Europe." Such statements disregard research done in this field (*cf.* Bökönyi 1974). The literature cited in the footnotes is dated to the 1950s or is attributed to authors who are not authorities in this field. Sheep and goats were the dominant species among the domesticated animals throughout the Neolithic of southeastern Europe. The spinning of wool is also evidenced from the same period.

South to North Movement across the Caucasus is not Supported by Archaeological Evidence

Gamkrelidze and Ivanov believe that the Indo-Europeans arrived in the North Pontic and north Caucasian area from the south across the Caucasus. In my view this could have been only the other way around: the Indo-Europeans from north of the Caucasus decended down to Transcaucasia, mainly to the Kuro-Arak valleys and further down to the northern part of Iran not later than the 4th millennium BC. The local Transcaucasian culture of the 5th and 4th millennia, characterized by a knowledge of bronze metallurgy, villages of round houses, and advanced pottery, cannot be a parent culture to the Kurgan culture north of the Black Sea, known as the Maikop culture. However, it is true that the Maikop culture was highly influenced by the Transcaucasian as well as the Mesopotamian culture at the end of the 4th and early 3rd millennia BC. Knowledge of metallurgy reached the North Pontic area from the south together with many types of weapons and ornaments. Imported goods from the south lavishly equipped North Caucasian chieftains' burials such as the Maikop royal tomb itself, in which a fantastic amount of gold figurines, silver jewelry, vases, and beads of precious stones were found. To acquire such riches, the tribal leaders must have either traded extensively with the south or raided the region. The Kuro-Arak culture is typified by the existence of large kurgans: royal tombs of an Indo-European character with parallels in the Maikop culture north of the Caucasus. The emergence of the inferior gray pottery in Iran probably is due to the influence from the north. In conclusion, the movement of people from south to north across the Caucasus is problematic.

The Kurgan Culture of the Eurasian Steppe Zone – Parent to European Indo-Europeans Only?

Gamkrelidze-Ivanov believe that the Kurgan culture of the south Russian steppes, from north of the Black Sea to the Trans-Volga area, was the proto-culture of Indo-Europeans in Europe. Therefore, this area was the secondary homeland for what they term the "Ancient European" languages.

Since 1956, when I introduced the term "Kurgan culture" (in the International Congress of Ethnological and Anthropological Sciences in Philadelphia), the chronology has markedly changed and the concept of "Old Europe" has come into use (Gimbutas 1973). It is necessary to repeat some of the major points of my hypothesis. However, I have not changed my view that the Kurgan tradition is a Proto-Indo-European tradition. *Kurgan* is the archaeological *blanket term* for these semi-nomadic pastoralists from the steppelands. Chronologically, the term is applicable to a time span comprising two millennia, from *c.* 5000-3000/2500 BC. This period saw three waves of migrations to Europe: Wave #1 at *c.* 4400-4200 BC; Wave #2 at *c.* 3400-3200 BC; and Wave #3 at *c.* 3000-2800 BC (Gimbutas 1977, 1980).

The "Kurgan tradition" extends over broad temporal and spatial parameters and is characterized by an economy essentially pastoral, with subsidiary rudimentary agriculture; by a patriarchal and hierarchial society; by seasonal settlements and small transient villages of semi-subterranean houses; by distinctive burial rites, including pit graves with tent-like or hut-like structures built of wood or stone, covered either by a cairn (in Kurgan I and II) or an earthen mound (in Kurgan III and IV); and by sky- and sun-oriented symbolism and warrior gods associated with weapons, horses, and cattle.

I divide this tradition into four periods: Kurgan I-IV (Table 1). This chronology, based on contacts with the west, represents various steppe peoples differing spatially and diachronically, but sharing a common tradition. Kurgan III, culturally more advanced (with a knowledge of metallurgy), developed in the

Approximate Date	**Pontic Steppe**	**West of the Black Sea, Central Europe**
4500	**Kurgan I**: Khvalynsk Complex in the Lower Volga Basin; Srednij Stog II in the lower Dnieper region (amalgation with the local Dnieper-Donets culture).	**Wave #1**: *c.* 4400-4200 BC. Cucuteni *A* (Moldavia); Karanova VI (Bulgaria); Vinča D (Yugoslavia); Tiszapolgár (eastern Hungary); Stroked Pottery, Rössen (Germany, Bohemia)
4000		
	Kurgan II: Late Srednij Stog	Cucuteni *AB, B;* Cernavoda I (Dobruja) Balaton – Vinča offshoot (W. Hungary, Slovenia).
3500		
	Kurgan III: Maikop culture Mikhajlovka I phase	**Wave #2**: *c.* 3400-3200 BC Usatovo and Gorodsk in western Ukraine, "Folteşti" in Moldavia; Cernavoda II in Dobruja; Coţofeni in Oltenia and Transylvania; Baden in the mid-Danube Basin; Ezero in central Bulgaria, Globular Amphora in central Europe.
3000		
	Kurgan IV: Yamna (Pit-grave) culture	**Wave #3**: *c.* 3000-2800 BC Corded Pottery (Common European Horizon); Vučedol (western Yugoslavia; Hungary, eastern Austria, Bohemia), followed by Bell Beaker.
2500		

Table 1:
Kurgan (Srednij Stog II, Mikhajlovka I, and Yamna) chronology based on contacts with the cultures west of the Black Sea and Central Europe.

North Pontic area between the lower Dniester and the Caucasus Mountains; and Kurgan IV people were again from the Volga steppe.

Russian archaeologists use the terms Srednij Stog II for Kurgan I and II (*c.* 4500-3500 BC) in the lower Dnieper basin; Mikhajlovka I or early Maikop culture for Kurgan III (*c.* 3000-2500 BC) and Yamna for Kurgan IV.

The Kurgan people first entered European prehistory when they migrated west of the lower Volga basin into the basin of the lower Dnieper, and subsequently west of the Black Sea.

In the Dnieper rapids region a stratified site with an earlier Dnieper-Donets settlement (Srednij Stog I) is overlain by a new cultural complex (Srednij Stog II) whose people practiced single burial in cairn-covered shaft or cist graves; the body was supine, either contracted or extended, and usually supplied with flint daggers and beakers with pointed bases. The skeletal remains, moreover, are dolichomesocranial, taller-statured, and of a more gracile physical type than those of their predecessors in the substratum (Zinevich and Kruts 1968; Kruts 1972). In contrast to the vegetal temper characteristic of the earlier Dnieper-Donets ceramics, the Srednij Stog II pots are tempered with crushed shell; the stamped, pitted; or cord-impressed decoration about the neck and shoulders presents a solar motif. Local evolution cannot account for such abrupt changes; our task, then, is to seek neighboring cultures typologically similar to Srednij Stog II for a possible source of this contrasting stratum. Such a parallel culture, one showing traits adaptive to the steppe-forest ecosystem, is to be found in the steppe region of the lower Volga and lower Urals, known as the Khvalynsk complex (Merpert 1974). The pottery is relatable to the earliest Neolithic in the Middle Urals and in Soviet central Asia.

The first contacts of the steppe pastoralists with the central Caucasus and middle Dnieper-Donets cultures afford the possibility of fixing a chronology datum somewhere in the first half of the 5th millennium BC.

A possible formative zone of the early Kurgan tradition seems to be located in Soviet Central Asia and south Turkmenia, which are contiguous with the steppe north of the Caspian. These regions share an ovicaprid economy and a round-based pottery tempered with crushed shell (Merpert 1974:272-273). The Srednij Stog II complex is an extension of the Volga-Ural pastoralists into the North Pontic (not from the south across the Caucacus). The hundred sites in the lower Dnieper-Don interfluve are primarily cemeteries (Telegin 1973). The burials are clearly relatable to the Volga-Ural steppe. Chisels, scrapers, and often long (to 22 cm.) pointed flint daggers were placed at the man's hand. Bifacially worked spearpoints, triangular flint arrowheads, narrow-butted flint and polished stone axes, and the aforementioned daggers form the prototypical Indo-European weaponry, usable from horse-back, seen later in the Bronze Age. The presence of antler hoes and querns is conclusive proof of agricultural activity in Srednij Stog II, although no grains have thus far been identified (barley was known at Dnieper-Donets prior to Srednij Stog II).

Precisely when the steppe pastoralists acquired the horse is indeterminate. The rapid spread of horse-breeding is attested in the late 5th and early 4th millennia BC (Telegin 1973:28ff; Gimbutas 1970:157-59). Allowing time for the development of domesticating techniques, we might venture a date *c.* 5500-5000 BC as not too early for the acquisition of the horse. The Kurgan I and II people of the lower Dnieper-Volga interfluve were primarily horse-breeders. Antler cheek pieces and the depiction of possible bridle equipment on stone sculptures is fairly convincing proof of equine domestication.

The proto-language and culture cannot be visualized as something stable, unchanging for millennia, or something like a tree trunk which regularly branched off into many limbs. Languages, like cultures, are living organisms; they constantly change; they live through periods of convergence and divergence. What we can do is to reconstruct, at a certain time and place, a cultural situation with characteristics which are in agreement with the linguistic and mythological reconstructions. We cannot go back much further than 5000 BC, to which we assign the earliest Kurgan culture. Kurgan I and II are marked by incessantly growing mobility and trade. I therefore assume the possibility of linguistic consolidation at this period in the North Pontic-Trans Volga steppe just before the outburst into Europe. The hypothetical PIE language does not reflect pre-agricultural conditions. As linguistically reconstructed, domesticated animals, including the horse; mobility; and a classed patriarchal society are among the most characteristic phenomena of the PIE culture. An earlier, mesolithic culture would not qualify to be PIE.

Domesticated animals played a paramount role in the PIE culture as is shown by the common names for sheep, (**owis*), cattle, (**gwōws*), steer, (**(s)tauro*) pig, (**sūs* and **porkos*), horse (**eḱwo* - **eḱwa*), goat, (**aiĝ-*) and dog, (**ḱwon-* **ḱun-*) in most of the Indo-European languages. There is another name for "cows and sheep," **peku(s)*: Latin *pecus,* Old Indic *pasu,* Baltic *peku.* Since this word has a family of related words connected with the meaning "fleece," "hair," and "to comb" (Greek *pekos,* 'fleece', Old High German *fahs,* 'skin hair', Latin *pectere,* "to comb"), it is assumed that **peḱu* originally connoted a woolly animal, probably sheep, and that there was a stage when only sheep were domesticated, and the other animals were not. This may apply to earliest Kurgan times in the lower Volga basin, and beyond, where sheep, not cattle, are known to be the prime domesticated animals. The words for 'wool' and 'weaving' are clearly PIE and may date back to the early phase of animal domestication.

With the Kurgan arrival at the Dnieper basin and the North Pontic lowlands, cattle gained importance. The changed ecological conditions in the 4th millennium BC may have been influential in the increase of cattle-raising. By the mid-4th millennium BC, oxen were used for ploughing and pulling carts. Cattle must have been the treasured possession of a family, clan, or tribe, and they were used in exchange – a trend attested by words and early historic records. Comparative Indo-European mythological research indicates the unquestionably prime role of the horse (particularly the white horse) as sacred

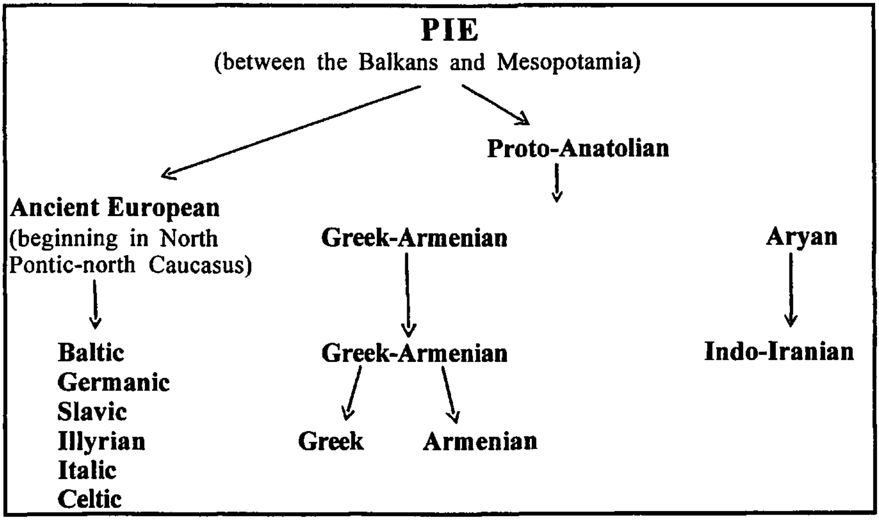


Table 2: Gamkrelidze-Ivanov Scheme

and sacrificial animal, the incarnation of divine power of the God of the Shining Sky (of all Indo-Europeans, not only of the European Indo-Europeans).

Linguists failed to reconstruct a common word for metallurgy. This should not be surprising: the early Kurgans (Kurgan I and II) did not know metallurgy; copper items were introduced to them by the Old Europeans. Metallurgy was acquired considerably later, in the second half of the 4th millennium BC from Transcaucasia, whence it was transmitted by the Kurgans to north of the Black Sea, and with Wave #2 to central Europe. The words support a very early use of the spear or point, knife or knife-dagger, axe, bow, and mace or club. This agrees with archaeological evidence as indicated by the stone, flint, and antler armament of Kurgan I warriors.

Mobility is unquestionably a PIE characteristic. Horse-riding was the prime means of Kurgan mobility. The reconstructed PIE form for vehicle is a form with a root **weĝh-*. Even parts of the vehicle are reconstructable: wheel **rotha* (Lithuanian *ratas,* German *Rad,* Old Indic *ratha,* 'chariot', Latin *rota*), axle – **aK'sis,* lynch pin – **tulis-* (in Lithuanian, Greek and Germanic), and yoke **yugom* (very well-attested). The family of the root **weĝh-* is associated with the words for lifting, carrying, lever, sleigh. This may imply that the original "vehicle" was for weight-lifting or levering, or was a sledge. Even if it was not a four-wheeled cart in its original form, the Proto-Indo-Europeans must have been acquainted with wheeled wagons from Kurgan I times. So far, the earliest evidence for the existence of wheels is miniature clay models of wheels found in Old European settlements (Cucuteni *A* and Karanovo VI phases) dating from *c.* 4500-4200 BC from the period of the first Kurgan extension into east central Europe. No parts of actual vehicles of this period have ever been found. The question as to who first invented the vehicle cannot as yet be solved.

The Kurgan mobility before their infiltration into Europe was probably similar to that of the later inhabitants of the steppe – the Scythians, Sarmatians, and others. Herodotus describes the Scythians as having no permanent structures or crops, to elude an enemy or to shoot at him from horseback whenever they chose. Indeed, it was easy for the Kurgans to burn their pit-dwellings and set out for the next territory. The nomadic type of mobility gradually petered out as the Kurgans infiltrated the agricultural regions of Old Europe.

The Indo-European contacts with the Finno-Ugric and Altaic languages are old and not restricted to the European branch of the Indo-Europeans. Terms for domestic animals, rudimentary agriculture, and vehicles also are not restricted to the European Indo-Europeans. The most ancient terms reflect the Kurgan culture, not highly civilized Old Europe or Anatolia. These steppe people spread not only to the west, but also to south, southeast, and east as far as Lake Baikal. The Bronze Age cultures of southern Siberia, such as Andronovo and Karasuk, are difficult to dismiss as not related to the Indo-Iranian branch and later Scythians and their relatives.

At the apex of its flourishing period in the 5th millennium BC, Old Europe became a target of the Dnieper-Volga steppe pastoralists, who, through several incursions, transformed and virtually razed it. Archaeological, mythological, and linguistic evidence speaks for the victory of the patriarchal social structure over Old European matrifocality. The Kurgan people introduced an administrative system centered in hillforts and a new religion with male warrior-gods dominating its pantheon (as opposed to the female deities as creatresses of Old Europe). The Indo-European speakers also introduced hard metal (arsenical bronze) for the production of daggers, flat and shaft-hole axes, and fighting on horseback with dagger, spear, shield, bow, and arrows. The agricultural economy of Old Europe was confronted with the pastoral economy of the Kurgan people (sometimes the two systems existed side by side). The change in architecture is manifested in the emergence of apsidal houses in hillforts and small sunken huts with a central hearth in ordinary villages. The change in the physical type of populations was marginal or uneven (more effective in the east than in the west).

The process of Indo-Europeanization was a cultural, not a physical, transformation. It must be understood as a military victory in terms of successfully imposing a new administrative system, language, and religion upon the indigenous groups. The social organization greatly facilitated the Kurgan people's effectiveness in war. The patrilinear and patriarchal structure and tripartite class system of rulers, warrior-nobility, and laborers is proved by the linguistic medium to be Proto-Indo-European. The same is reflected in Indo-European mythologies.

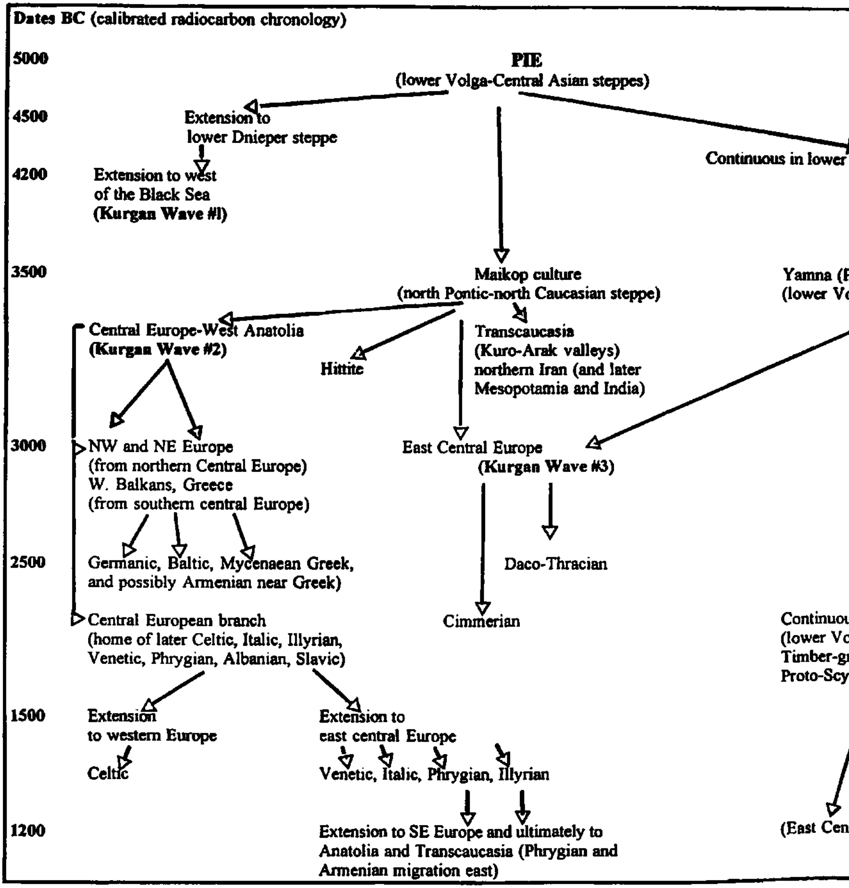
The Kurgan incursions produced a hybrid culture. The interplay between the two social, economic, and symbolic systems characterizes the east central

European cultures after the end of the 5th millennium BC. New culture units which crystallized before 3000 BC, *i.e.* after the Second Wave, are essential to the question of the ethnogenesis of Indo-European speaking groups in Europe. In fact, we can speak of the secondary homeland as being in central Europe.

Following Wave #2, the Indo-Europeanized or partially Indo-Europeanized territories covered all central Europe. A series of names in archaeological literature designate local groups – Usatovo, Folteşti, Cernavoda, Coţofeni, Ezero, Baden – in southern central Europe and the Globular Amphora in northern central Europe. Although the substratum populations played an important part in the formation of new cultural entities, the limits of the distributions of new culture groups do not coincide with those of the Old European groups. In other words, the cultural map was totally reshaped. Classical examples of hybridized cultures are the well explored Baden in the middle Danube basin and the Globular Amphora in northern central Europe. Both were formed after Kurgan Wave #2. Indigenous and intrusive cultural elements (originating in the North Pontic Maikop culture) are easily detected; they seem to be on a par in the Baden territories (Sochacki 1980). The physical type of the population, however, is predominantly Old European (Szathmáry 1980). Looking through the eyes of an archaeologist, the Globular Amphora culture is seen as the product of crossing the cultural features of the earlier Funnel Beaker and Cucuteni-Tripolye with the North Pontic Maikop. The success of Indo-Europeanization within the Globular Amphora territory is seen in the complete congruence between the burial rites of this culture and those of the Maikop group (Gimbutas 1980:292ff.). The increase of semi-nomadic pastoralism, and the emergence of hillforts and semi-subterranean or above-ground small timber houses with a central hearth, further document the successful process of Indo-Europeanization. A clash of two different social systems and the victory of patriarchy account for the decline of Cucuteni-Tripolye architecture and the disappearance of towns, temples, sculptures, figurines, cult paraphernalia, and painted ceramics. Such drastic changes and deterioration of cultural values of a millenial tradition cannot be explained by a local social evolution or environmental changes.

In the wake of Wave #2, the Kurganized (Indo-Europeanized) territories in central Europe formed a second homeland as it became a core from which further migrations emanated around 3000 BC. The new upheaval was caused by Kurgan Wave #3, the incursion of Dnieper-Volga steppe ("Yamna") pastoralists into east central Europe to northeastern Hungary in the west and Bulgaria in the south. The central Europeans shifted now to the northwest and northeast (the Globular Amphora-Corded Pottery) and to the west, south, and southeast (the Baden-Vučedol movement to Italy, Albania, and possibly along the sea as far as the Peloponnese). After repeated processes of interaction with indigenous populations in newly acquired territories, they formed new culture units and eventually developed new linguistic branches. These were to become the northern and southern groups of the Indo-European speaking family: Germanic, Baltic, and Greek. (I do not see any possibility that Greeks came from Anatolia

Table 3: Gimbutas Scheme (Based on Archaeological Evidence)



and that the so-called Minyan pottery is of Indo-European character: this beautiful pottery has Old European-west Anatolian roots). The remaining population of central Europe remained at a relatively undifferentiated level until the Middle Bronze Age (15th century BC) and Late Bronze Age (13th century BC), when it shifted to the west, south, and southeast. Hence, the formation from the central European core – Celtic, Italic, Venetic, Illyrian, Phrygian, Slavic, and Albanian – is of a much later date.

The study of an early stratum of river names in Europe is considered by Krahe to be early Indo-European. It shows correspondences between river names in Baltic, Germanic, Celtic, Illyrian, Venetic, Italic, and marginally in Slavic (Krahe 1957). On the basis of these similarities, Krahe assumed that the languages in question once formed a linguistic unit north of the Alps, and that central northern Europe might well be regarded as the Indo-European homeland area. If the names are Indo-European (and very probably the majority are), they should be weighed as evidence for a linguistic unity of the secondary European home area, but not primary as Krahe believed. The names of small rivers north of the Black Sea considered by Gamkrelidze and Ivanov to be ancient Indo-European and related to those of central Europe (1985b:76) furnish a confirmation that Indo-European speakers in central Europe and in the North Pontic area spoke a related language.

The movement northwest (to northwestern Germany, Holland, Denmark, southern Sweden, southern Norway, and eastern Ireland) and northeast (the east Baltic, Byelorussia, and central Russia) from central Europe began during the late Globular Amphora period. It continued during the common European horizon of the Corded Pottery culture (which is the successor of the former). The calibrated radiocarbon chronology for this great extension in rounded numbers is 3000-2500 BC. The existence of early Indo-European hydronymy in the lands of ancient Balts from the Vistula basins in the west to the upper Dnieper-upper Volga-Oka basins in the east (as has been shown by a series of studies: Būga 1924; Vasmer 1932; Toporov and Trubachev 1962; Schall 1964, 1966; and Vanagas 1980, 1981) excellently confirms the extension of the Indo- Europeans from central Europe to northeastern Europe. A large percentage of studies show that river names in this region are very close to the early Indo-European names in central Europe. The physical anthropological evidence also supports the same direction of movement (Menck 1980). The multidisciplinary studies (archaeology, physical anthropology, linguistics, mythology) in this territory make the question of the Baltic ethnogenesis least controversial of all the Indo-European families (*cf.* Gimbutas 1983, 1985).

As mentioned before, the process of Indo-Europeanization was a process of hybridization. The higher the substratum culture, the more difficult it is to trace the immigrants. To this day, there is much discussion about the arrival of Greeks in Greece. The advent of Indo-Europeans in Greece is set too late. Indeed, if the emphasis of study is restricted to material culture alone, it is almost impossible to set a line of demarcation between the Old European Early Helladic culture and the Indo-European. The very latest arrival for Indo-

Europeans in Greece can be set in Early Helladic II times, sometime between 2900 and 2600 BC. One of the routes (but probably not the only one) was the Adriatic Sea, most probably originating in the Baden-Vučedol culture of northwestern Yugoslavia. The structure of tumuli and royal tombs at Steno on Leukas, west of the Peloponnese, indicates contacts with the Maikop culture (Wave #2), not with the Yamna (Pit-grave) culture of Wave #3. The Indo-European warrior groups settling in Greece were not numerous. Their material culture merged with the local, and the population remained basically composed of local stock, *i.e.* gracile Mediterranean (Xirotiris 1980).

The formation of Proto-Germanic, Proto-Baltic, and Mycenaean Greek cultures largely depended on the influence of the substratum culture: in some areas it was considerable (Greece), in others, not at all (Byelorussia, central Russia). The development of their languages also depended on the same conditions. Hence, the distinguishing character of their languages: Greek heavily influenced by Old European, whereas Baltic is pure, with almost Proto-Indo-European features. Affinities with Indo-Iranian can be explained by the fact that both developed from the proto-language in the North Pontic area (the Maikop culture).

In conclusion, let us compare the Gamkrelidze-Ivanov scheme (Table 2) and my scheme (Table 3).

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Remarks on the Ethnogenesis of the Indo-Europeans in Europe*

The Transformation (Indo-Europeanization) of Old Europe

Neolithic and Copper Age Europe (6500-3500 BC) was non-Indo-European. I have named it "Old Europe" (Gimbutas 1973) to clearly distinguish it from the later Indo-Europeanized Europe. (The term is not to be confused with *"alteuropäisch,"* used for the earliest Indo-European river names in central Europe which belong to the secondary Indo-European homeland in central Europe.) This culture is the antithesis of all the characteristics understood as Indo-European, which have been reconstructed with the help of comparative linguistic and mythological research, best visible in social structure and religious pantheon, symbolism and practices.

The highest achievements of the Old European civilization were manifested in east central Europe in the 5th millennium BC. At the apex of its flourishing period, it became a target of the Dnieper-Volga steppe pastoralists and, about one thousand years later, of the North Pontic-North Caucasian pastoralists who virtually transformed it. The winners were warlike and mobile Proto-Indo-Europeans whom, for the sake of convenience, I call "Kurgan" people.

Three vigorous waves were made by the Kurgan people into Copper Age Europe over the period of *c.* 4500-2500 BC (Gimbutas 1977, 1980). Based on calibrated radiocarbon chronology, approximate dates are: Wave #1, *c.* 4400-4200 BC; Wave #2, *c.* 3400-3200 BC; and Wave #3, *c.* 3000-2800 BC. Each wave worked a kurganizing effect on the local population resulting in a considerable change of culture. This process of transformation is synonymous with the concept of Indo-Europeanization.

Archaeological, mythological, and linguistic evidence speaks for the victory of the patriarchal social structure over Old European matrifocality and probable matrilinearity. The Kurgan people introduced an administrative system centered in hillforts and a new religion with male warrior gods dominating its pantheon (as opposed to the female goddesses as creatresses of Old Europe). The Indo-European speakers also introduced hard metal (arsenical bronze) for the production of daggers, flat and shaft-hole axes, and fighting on horseback with dagger, spear, shield, bow, and arrows. The agricultural economy of Old Europe was confronted with the pastoral economy of the Kurgan people (as a

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result, sometimes the two systems existed side by side). The change in architecture is manifested in the emergence of apsidal houses on hillforts and small sunken huts with a central hearth in ordinary villages. The change in the physical type of populations was marginal or uneven (more effective in the east than in the west).

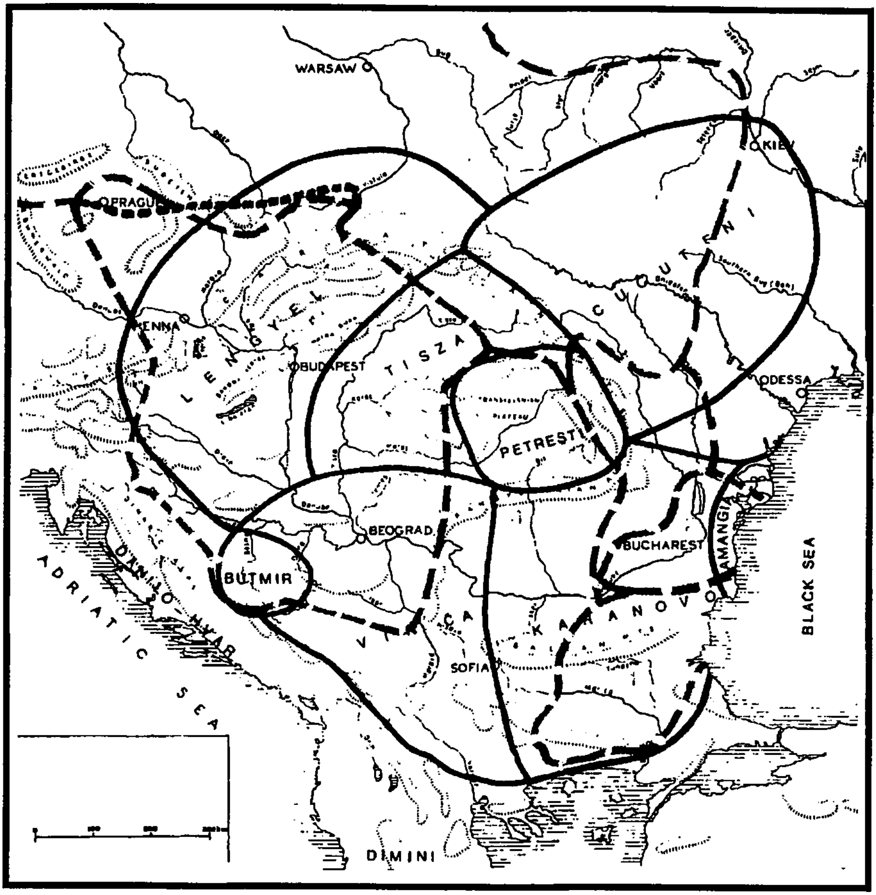
The process of Indo-Europeanization was essentially a cultural, not a physical, transformation. It must be understood as a military victory in terms of successfully imposing a new administrative system, language, and religion upon the indigenous groups. The social organization greatly facilitated the Kurgan people's effectiveness in war. The patrilinear and patriarchal structure and tripartite class system of rulers, warrior nobility, and laborers is proved by the linguistic medium to be Proto-Indo-European. The same is reflected in Indo-European mythologies. The Old Europeans had neither a warrior class nor horses. They lived in (probably) theocratic monarchies presided over by a queen-priestess.

The Kurgan incursions produced a hybrid culture. The interplay between the two social, economic and symbolic systems characterizes the east central European cultures after the end of the 5th millennium BC with an exception of the Cucuteni (Russian Tripolye) culture which survived until the middle of the 4th millennium BC. In the south and west, Old European culture continued much longer, in some areas, such as the Mediterranean islands, for nearly three millennia.

For our purposes, it is not necessary to go back so far as Wave #1 of the late 5th millennium BC. We shall begin with the situation which emerged after Wave #2, the second half of the 4th millennium BC (Fig. 1). New culture units which crystallized during this period are essential to the question of the ethnogenesis of Indo-European speaking groups in Europe.

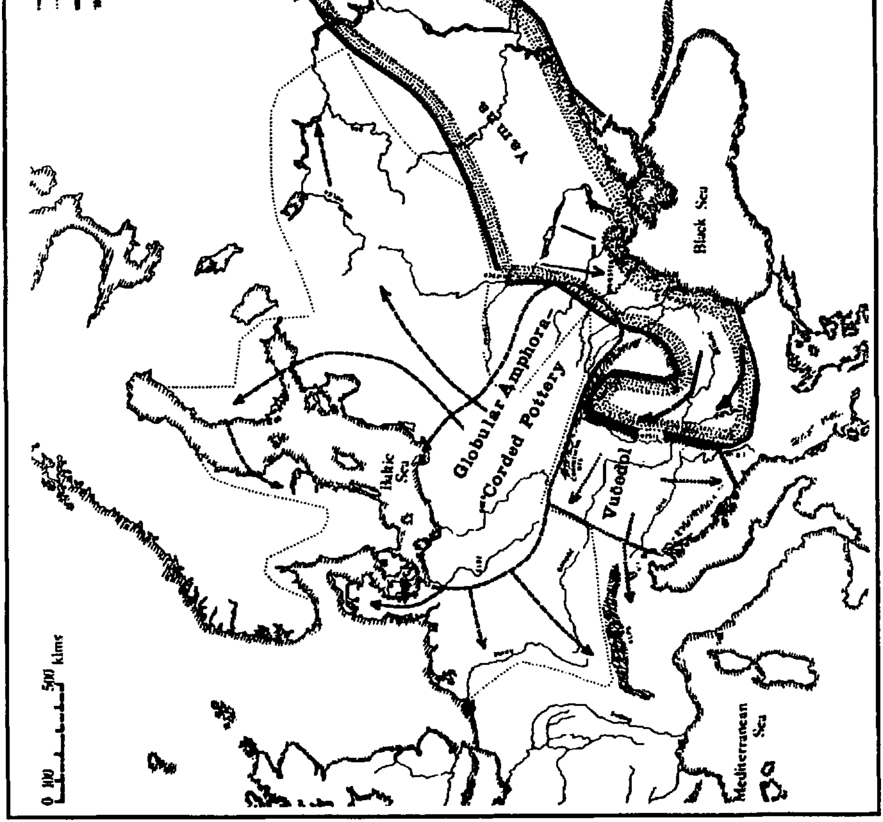
Following Wave #2, the Indo-Europeanized or partially Indo-Europeanized territories covered all central Europe. A series of names in archaeological literature designate local groups – Usatovo, Folteşti, Cernavoda, Coţofeni, Ezero, Baden – in southern central Europe and the Globular Amphora in northern central Europe. Although the substratum populations played an important part in the formation of new cultural entities, the limits of the distributions of new culture groups do not coincide with those of the Old European groups. Baden, for instance, spread over the territories of Lengyel, Tiszapolgár, and Vinča; the Globular Amphora over TRB-Funnel-necked Beaker and Cucuteni. In other words, the cultural map was totally reshaped (Map 1).

Classical examples of hybridized cultures are the Baden in the middle Danube basin and the Globular Amphora in northern central Europe. Both were formed after Wave #2. Indigenous and intrusive cultural elements (originating in the North Pontic Maikop culture) are easily detected; they seem to be on a par in the Baden territories (Sochacki 1980). The physical type of the population, however, is predominantly Old European (Szathmáry 1980). The Globular Amphora culture is seen as the product of crossing the cultural features of the



Map 1: Old European culture groups of the 5th millennium BC and new cultural boundaries crystalized *after Wave #2*, late 4th millennium BC. Key to the 4th millennium map (broken line) 1) Ezero; 2) Cernavoda; 3) Folteşti; 4) Coţofeni; 5) Baden; 6) Globular Amphora.

earlier Funnel-necked Beaker with the North Pontic Maikop. The physical type of the Globular Amphora population is unfortunately not adequately known, but a certain gradation from east to west within the Globular Amphora population has been noted by Schwidetzky (1980). The success of Indo-Europeanization within the Globular Amphora territory is seen in the congruence between the burial rites of this culture and those of the Maikop group (*cf.* the Mikhajlovka I stage: see Gimbutas 1980:292ff). The increase of seminomadic pastoralism, the emergence of Indo-European gods and symbols, hillforts, and semi-subterranean or above-ground small timber houses with a central hearth further document the successful process of Indo-Europeanization.



Map 2: Migrations from central Europe northeast, northwest, southwest, and south caused by a massive incursion of "Yamna" steppe pastoralists *c.* 3000-2800 BC.

Central Europe: The Second Homeland of the Indo-Europeans

In the wake of Wave #2, the Kurganized (Indo-Europeanized) territories in central Europe formed a second homeland as it became a core from which further migrations emanated after 3000 BC. The new upheaval was caused by Kurgan Wave #3, the incursion of Dnieper-Volga steppe ("Yamna") pastoralists into east central Europe to northeastern Hungary in the west and Bulgaria in the south. The central Europeans shifted now to the northwest and northeast (the late Globular Amphora-Corded Pottery) and to the west, south, and southeast (the late Baden-Vučedol movement to Italy, Albania, and possibly along the sea as far as the Peloponnese; Map 2).

After repeated processes of hybridization with indigenous populations, new culture units formed and eventually new linguistic branches developed. These were to become the northern and southern groups of the Indo-European speaking family: Germanic, Baltic, and Greek. The remaining population of central Europe stayed at a relatively undifferentiated level until the Middle Bronze Age (the 15th century BC) and Late Bronze Age (the 13th century BC), when it shifted to the west, south, and southeast. The formation from the central European core of Celtic, Italic, Venetic, Illyrian, Phrygian, Slavic, Albanian, and Armenian groups probably does not precede the middle of the 2nd millennium BC.

Early Indo-European River Names

The study of an early stratum of river names in Europe is considered by Krahe (1957) to be early Indo-European. It shows correspondences between river names in Baltic, Germanic, Celtic, Illyrian, Venetic, Italic, and marginally in Slavic. Such series of early names are, for instance: Ala, Alsa, Aura, Drava, Mara, Nava, Neta, Sala, Sava (to mention a few). On the basis of these similarities, Krahe assumed that the languages in question once formed a linguistic unit in the middle part of Europe and that central Europe may well be regarded as the Indo-European homeland area. If the names are Indo-European (and very probably the majority are), they should be weighed as evidence for a linguistic unity of the secondary Indo-European home area, but not primary as Krahe believed. It has been shown that among the hydronyms considered to be early Indo-European a series of names are non-Indo-European, *i.e.* adopted from the local European population (Tovar 1982:19).

Krahe's *alteuropäische Gewässernamen* fit rather well with Friedrich's results on Indo-European names for trees, *i.e.* the remarkable preservation of old names by the Germanic, Italic, Baltic, and Slavic speakers (Friedrich 1970).

Common Names of the European Branch

The name for the 'sea' – *mari* – is known in Italic, Celtic, Germanic, Baltic, and Slavic (Italian *mare,* German *Meer,* Lithuanian *marės*). There is no trace of this word in Thracian or Indo-Iranian. Hence there is a probability that the word goes back to the common culture and language of Italic, Celtic, Germanic, and Slavic groups located near the sea. Which sea: the Black, Baltic, or Northern? If it were the Black Sea, we should expect the word *mari* to be known to Indo-Iranian and Thracian speakers, which it is not. As for the Baltic Sea or Northern Sea location, archaeological evidence supports the former. Sites of the Globular Amphora culture are found along the shores of the Baltic Sea between Denmark and Lithuania.

In addition to the word for 'sea', a word for 'eel' is attested in Baltic, Slavic, Italic, and Greek: Old Prussian *angurgis*, Lithuanian *ungurjis*, Latin *anguilla*, Russian *ugor'*, Polish *wegorz*, Greek *'εγχεηυς*. The eel is found in the Baltic Sea and in the rivers discharging into it. The word for 'salt' is also confined to the Indo-European speakers of Europe: **sald*, gen. **salnés*. The word may very well be of local origin connected with an intensive exploitation of salt in Austria, Germany, and southern Poland, attested from Neolithic-Chalcolithic times. The strong set of Indo-European tree names is best represented by the European Indo-European languages. Four stocks, Italic, Germanic, Baltic, and Slavic, form a sort of core or nucleus. The four groups preserved ten to twelve of the fourteen tree names. Celtic and Greek are next to the core in frequency.

The northern European plain – the distribution area of the Globular Amphora culture – was covered by mixed hardwood forests. This environment, the least changed by climatic conditions from the forest-steppe belt in southern Russia, must have favored the preservation of the original Proto-Indo-European tree names.

Agriculture and Its Increase in the European Branch

Agriculture was minimal in the Kurgan culture of the steppe. However, a considerable agricultural terminology in the European branch of the Indo-Europeans is suggested by lexical studies. It follows that the increase of agriculture is synchronic with a decrease of nomadism after the incursion of the Kurgan people into Europe where agriculture had a millennial tradition.

So far, only millet has been identified in Kurgan sites of the Dnieper-Volga steppe. There is no trace of Einkorn and Emmer wheat, barley, oats, or rye; but stone hoes, flint sickle blades, and quern stones have been found in settlements. Large hoe-like tools, recovered from several settlements, are considered to be primitive plough-shares. It seems that in their original home, the Kurgan people practiced an extensive form of wild grass economy. Again, the linguistic evidence is an accord: the Proto-Indo-European word **pūris*, originally probably 'wild grass', is used for bread. In the majority of languages **pūris* means couch-grass, sedge, spelt, rye-grass or winter wheat. Apparently **yewos* was a name for any sort of cereal used in the manufacture of intoxicating beverages. In some languages it means cereal in general; in others, it pertains to wheat, barley, or millet. The latter meanings (wheat, barley, millet) were probably acquired later. Thus, except for millet, a 'ground' cereal, **yewos*, a cereal used for fermentation, and **pūris*, a grass or spelt wheat, there are no other well-attested words for cereals, nor is there archaelogical evidence for their existence.

Common names for rye, barley, and oats are found only in the European branch of the Indo-European languages. **Rughis,* 'rye', is known in Slavic, Baltic, Germanic, and Celtic. The word for 'oats' with the root **aw* is known in Slavic, Baltic, and Latin. 'Barley' apparently designated "food derived from cereals," as Latin, Germanic, and Slavic forms suggest.

Some names are common to Indo-European speakers of southern Europe: beans, peas, vetch, and poppies are attested in Latin, Albanian, and Greek. All these plants are well known from the Neolithic in southeastern Europe, and it is quite possible their names were later inherited by the Indo-European speakers. The name for flax (Latin *linum*) is known in Latin, Greek, Slavic, Baltic, and Germanic. The word for hemp (Latin *kannabis*), is preserved in Greek, Albanian, Germanic, Slavic, and Baltic, but it is not known among eastern Indo-European speakers. The above suggests that Indo-European speakers in Europe were acquainted with many cereals and pulses as well as with flax and hemp. Some names are common to a larger group of languages and therefore may hark back to the formative period as an after-effect of Wave #2, to the second half of the 4th millennium BC. Pulses were apparently inherited from the substratum population of southeastern Europe. It is clear that the agricultural terminology was enriched as Proto-Indo-Europeans moved west.

The Emergence of the Northern and Southern Indo-Europeans through the Migration from Central Europe, 3000-2500 BC

The infiltration of the Indo-European culture elements into Holland, Denmark, southern Sweden, southern Norway, eastern Ireland, and northeast Europe (the East Baltic, Byelorussia, and central Russia) from central Europe began during the late Globular Amphora period. It continued during the common European horizon of the Corded Pottery culture (which is the successor of the former; Map 2). The calibrated radiocarbon chronology for this great extension in rounded numbers is 3000-2500 BC. Culture change affected by the incoming Indo-Europeans was mainly social and religious. Patriarchal rule is evidenced by the appearance of hillforts and prominent burials of chieftains and warriors. The Indo-European sun cult is depicted in pottery decoration (concentric or radiating designs on ceramics executed by cord impressions or incisions) and amber discs or ring pendants. The horse cult is portrayed by engravings of horse figures and by sacrifice. Individual burials replace collective graves in the northwest (hence the label "single-grave culture"). Individual burials in stone cists under barrows and pottery decorated with solar designs are evidenced at this particular time period even in eastern Ireland (Herity 1982). In the east Baltic area, Byelorussia, and central Russia, the emergence of tumuli, royal tombs, and male graves equipped with boat-shaped stone shaft-hole axes is a new unifying phenomenon reflected in the name "The Battle-Axe (or Boat-Axe) culture" or German "Streitaxtkultur," given to this group.

As mentioned before, the process of Indo-Europeanization was a process of hybridization. In the territories where the substratum culture was of a higher level, the influence of the local culture is marked. This is especially true for the areas of the Funnel-necked Beaker (TRB) and Narva cultures. If one studies only material culture in these areas, one comes to the conclusion that there was no or little change in culture. (In the past, such studies as Malmer [1962], which showed insignificant changes in tool forms between the TRB and Corded Pottery cultures, generated disbelief in migrations of the Corded Pottery culture.)

However, the study of culture change is more challenging than the study of material culture alone. We have seen that the Indo-Europeans in their second, European, homeland were no longer nomadic steppe pastoralists; they had become mixed farmers. It is therefore of no use to expect Kurgan type pastoralism in the northern European plain or in central Russia. In the 3rd millennium BC, we deal with expanding waves emanating from central Europe and not from the Dnieper-Volga steppe.

The radical change in economy can be traced only in regions where local inhabitants previously were food gatherers, namely in the northern east Baltic area and in central Russia. Here, the Corded Pottery (the "Battle-Axe") people brought a mixed farming economy with cattle and horse breeding pronounced throughout. In addition, archaeological evidence in these territories has shown that the food producers lived apart from local hunters and fishers and that they did not intermingle for a considerable time. The physical anthropological data have proved the presence of central Europeans (related to the Corded Pottery population in Poland) in central Russia in the upper Volga and even the middle Volga basins (Schwidetzky 1978; Menck 1980). The amazing preservation of Indo-European river names between the Baltic Sea and central Russia, discussed below, is another indicator of a strong Indo-European superstratum in the territories of the food-gatherers.

To this day, there is much discussion about the arrival of Indo-Europeans in Greece and their advent is set too late. Indeed, if the emphasis of study is restricted to material culture alone, it is almost impossible to set the line for the demarcation between the Old European Early Helladic culture and the Indo-European. The very latest arrival for Indo-Europeans in Greece can be set in Early Helladic II times, sometime between 2900 to 2600 BC. One of the routes (but probably not the only one) was the Adriatic Sea, most probably originating in the Baden-Vučedol culture of northwestern Yugoslavia. The structure of tumuli and royal tombs at Steno on Leukas, west of the Peloponnese, indicates contacts with the Maikop culture (Wave #2), not with the Yamna (Pit-grave) culture of Wave #2. The Indo-European warrior groups settling in Greece were not numerous, and yet they succeeded in transforming (Indo-Europeanizing) the local culture. This became apparent during the Middle Helladic period in the early 2nd millennium BC. The local population remained basically composed of local stock, *i.e.* gracile Mediterraneans (Xirotiris 1980).

The formation of Proto-Germanic, Proto-Baltic, and Mycenaean Greek cultures largely depended on the influence of the substratum culture: in some areas it was considerable (Greece), in others, not at all (Byelorussia, central Russia). The development of their languages must have depended on the same conditions. Hence, the distinguishing character of their languages: Greek heavily influenced by Old European; whereas Lithuanian is considered "pure," in some cases with excellent presenation of Proto-Indo-European features.

The Formation of the Baltic Family

The Baltic linguistic family is rooted in the period of 3000-2500 BC, *i.e.*, the expansion of the Globular Amphora-Corded Pottery culture into the east Baltic, Byelorussia, and central Russia. This is demonstrated by the extension of Baltic river names and the continuity of culture throughout the Bronze and Iron Ages.

The Baltic Territories on the Basis of Hydronymy

Indo-European and Proto-Baltic hydronyms are found far beyond the modern ethnic boundaries of Lithuania and Latvia. They extend over Byelorussia and central Russia. In his studies of 1913 and 1924, Būga was the first to point out the Baltic nature of the hydronyms in Byelorussia, the Pripet region, and the upper Dnieper basin. This was followed in 1932 by the research of Slavicist Vasmer. He proved Baltic settlement in Smolensk, Tver (Kalinin), Moscow, and Chernigov districts. In their 1962 study, Toporov and Trubachev identified *c.* 800 Baltic hydronyms in the upper Dnieper basin alone. The Baltic hydronymy of the lands of contemporary Byelorussia and central Russia proves the extent of Baltic settlement more forcefully than do archaeological finds alone.

In prehistoric times, the Baltic areas in the west were considerably greater than the extent of Baltic Prussian settlement to the lower Vistula at the beginning of historical times. In Pomerania, as far as the Persante River in the west, Baltic toponyms were noted by Kilian in 1939. Krahe also confirmed the Baltic nature of these names in 1943. Hydronymic studies of the German linguist Schall in East Germany extended the boundaries of the western Balts west of Berlin (according to Schall 1964, the name Berlin is itself of Baltic origin). In the basin of the upper Havel, Schall (1966) identified twenty-seven Baltic hydronyms. In this region, Baltic hydronyms must belong to an early stratum: Slavic and Germanic hydronyms were laid over them in later times.

A large percentage of river names considered to be Baltic is very close to the earliest stratum of Indo-European river names in central Europe, *i.e.*, Krahe's *"alteuropäische Flussnamen"* (Vanagas 1980, 1981). We assume therefore that their beginning goes back to the spread of the Corded Pottery culture over the east Baltic, Byelorussia, and central Russia.

Baltic Territories on the Basis of Archaeology

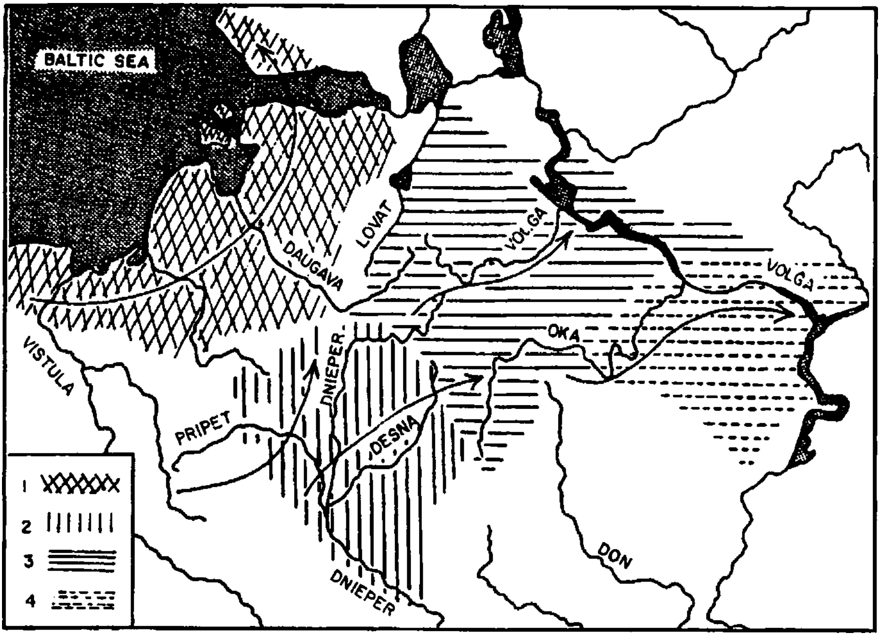
The spread of Baltic river names rather well coincides with the distribution of the Baltic Haff (Haffküsten, Rzucewo) branch of the Corded Pottery culture, the upper Dnieper variant of the same culture, and the Fat'janovo culture in the upper Volga basin (Map 3). Each group has its own local flavor, resulting from ecological conditions and the substratum cultures (the Narva, Nemunas, and Volosovo).

The largest number of settlements of the "Baltic Haff" culture has been researched between the lower Vistula and western Lithuania. The settlements are chronologically associated with late Globular Amphora and the very earliest phase of the Corded Pottery culture. The influence of the substratum (the Narva culture) is evident in various spheres of the economy, for example, in the production of flint tools or fishing implements. At the Šventoji IA site and Šarnelė in western Lithuania, numerous fishing implements were found: harpoons, forks, fish traps, fish-catching nets of linden bark fibers, boats, oars, and pushing sticks. All these had prototypes in the Narva culture (Rimantienė 1980).

We assume that the influence of the "Narva" substratum culture and language affected the development of the Corded Pottery people's culture and language, which eventually evolved into western Baltic (Prussian). The Bronze and Early Iron Age cultures of Pomerania, former Prussia, and western Lithuania, which we associate with the western Balts, developed from the Baltic Haff culture, a hybrid of the Narva and Corded Pottery cultures.

The rise of the Bronze Age culture in the Baltic area was due to the lively amber trade with central Europe and beyond. The distribution of the earliest bronze artifacts is within the territory of the former Baltic Haff (Haffküsten) culture. Although the metal culture was clearly inspired by the central European Únětice (Aunjetitz) and later, Lausitz culture, the cultural continuum was manifested in burial rites (tumuli with stone cairns and multiple stone rings), local development of forms of tools and ornaments, and successive occupation of hillforts. Local styles of ornaments and ceramics as well as peculiarities in burial customs enable archaeologists to distinguish Late Bronze Age culture groups within this territory (lower Vistula, west and east Masurian, Samland-Semba and Notanga, and Curonian in western Lithuania and Latvia). The same grouping continued into the Iron Age (Map 4) to the beginning of history. From the archaeological standpoint there is no doubt whatsoever about the cultural continuity of each group. In the 2nd century AD, the first Prussian tribal names, *Galindai* and *Sudinai,* appeared on Ptolemy's map, identifiable with the west and east Masurian groups. Other tribal names emerged later: Curonians, *Chori, Cori,* are mentioned from the 7th century AD and the collective name for the Prussians, *Pruzi*, since the 9th century AD.

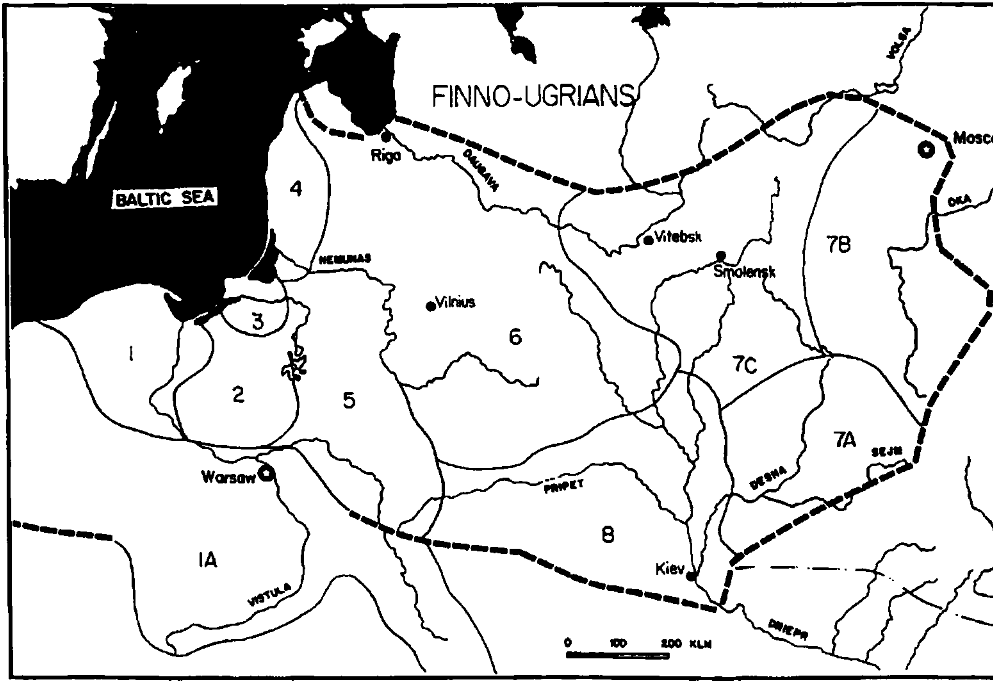
The ethnohistory of the maritime Balts (the historic Prussians and Curonians) is one of the most clearly established. Archaeologically, this area is one of the richest and best explored of the Baltic territories (Gimbutas 1963, 1983; Engel 1935).



Map 3: Corded Pottery (Battle-Axe) groups in northeastern Europe formed after the migration from central Europe. 1) Baltic coastal culture; 2) upper Dnieper; 3) Fat'janovo; 4) Balanovo (related to Fat'janovo and the first to disappear due to the amalgamation with the Finno-Ugric culture). The map reflects the situation *c.* 2800-2300 BC.

In the eastern Baltic territories, cultural continuity is manifested by continuous habitation in fortified hilltop villages. In the upper Dnieper basin, in the early Iron Age, the "Brushed Pottery" and "Milograd" groups emerged. The continuum of ceramics and other artifacts in hilltop villages of the "Brushed Pottery" group can be traced throughout the entire Iron Age. This central Baltic territory, which covered eastern Lithuania, eastern Latvia and northern Byelorussia (Map 4:6), was one of the most stable and conservative regions. It was the core from which later Lithuanians and Latvians developed.

The Milograd group in the Pripet basin, the Dnieper area north of Kiev, and the lower Desna (Map 4:8) seems to coincide with the location of Herodotus' *Neuroi* (Herodotus, in Histories IV, describes the Scythians waging war against the Persians in 515 BC; thus, *Neuroi* is the earliest name for the southern Balts in written records). From *c.* 200 BC-200 AD, the Milograd group was infiltrated by the *"Zarubinets"* people from the west, the hypothetical Prussian *Galindians,* and subsequently assimilated with them. Their presence in central Russia, southwest of Moscow, is mentioned as late as the 12th century AD in the Primary Russian Chronicle (as *Goliad'*, from *Golędi, Galindai*).



Map 4: Distribution area of Indo-European — (disconnected line) and culture groups *c.* 500 BC. 1 culture; 2) West Masurian (*Glindai*); 3) *Semba-Notanga*; 4) *Curonian*; 5) East Masurian (*Sud* culture, ancestral to Lithuanians, Latvians, and other central Baltic tribes; 7) "Plain Pottery" grou "Milograd" (Herodotus' *Neuri*).

In the former Fat'janovo territory, the continuous cultural development was manifested by the "Plain Pottery culture" of fortified hilltop villages. The last-named group, in the Desna and upper Don basins, carries the name "Bondarikha" for the Late Bronze Age, and "Jukhnovo" for the Early Iron Age and first centuries of the Christian era (Gimbutas 1983:109-123 with further bibliography). The Plain Pottery group, partially merged with the Prussian Galindians, persisted to the expansion of the eastern Slavs into the Desna basin in the 7th-8th centuries AD.

The above outline of the Baltic ethnogenesis demonstrates that the Baltic identity is one of the least controversial of the Indo-Europeans of Europe and is similar to that of Germanic speakers (discussed by W. Bernhard and J. Pálsson, 1986). Located outside the main traffic in the forested zone and protected by the Pripet marshes on the south, this area shows an undisturbed cultural continuum for millennia. The unravelling of Baltic ethnogenesis and ethnohistory is an eloquent example of the great importance of hydronymy for the study of ancient ethnic boundaries.

The Bronze Age Homeland of the Central Indo-Europeans, *c.* 2500-1500 BC

After the departure of the Corded Pottery people to the northwest and northeast, the central European core further developed, entering a true metal age at *c.* 2200-2000 BC. Corded Pottery groups in southwestern Germany, Switzerland, central Germany, Upper Lausitz, Bohemia, Silesia, the Upper Vistula, southeast Poland, western Ukraine East Moravia, and Slovakia (Chlopice-Vesele group), and lower Austria gradually became more united by means of the intensive metal and amber trade. The Únětice (Aunjetitz) group in these territories was characterized by a rather uniform material culture, architecture, burial rites, and social structure. The remnants of the Bell Beaker population within the Únětice territory are recognizable by the insignificant presence of brachycephaly among the largely leptodolichocephalic forms (Stloukal 1974).

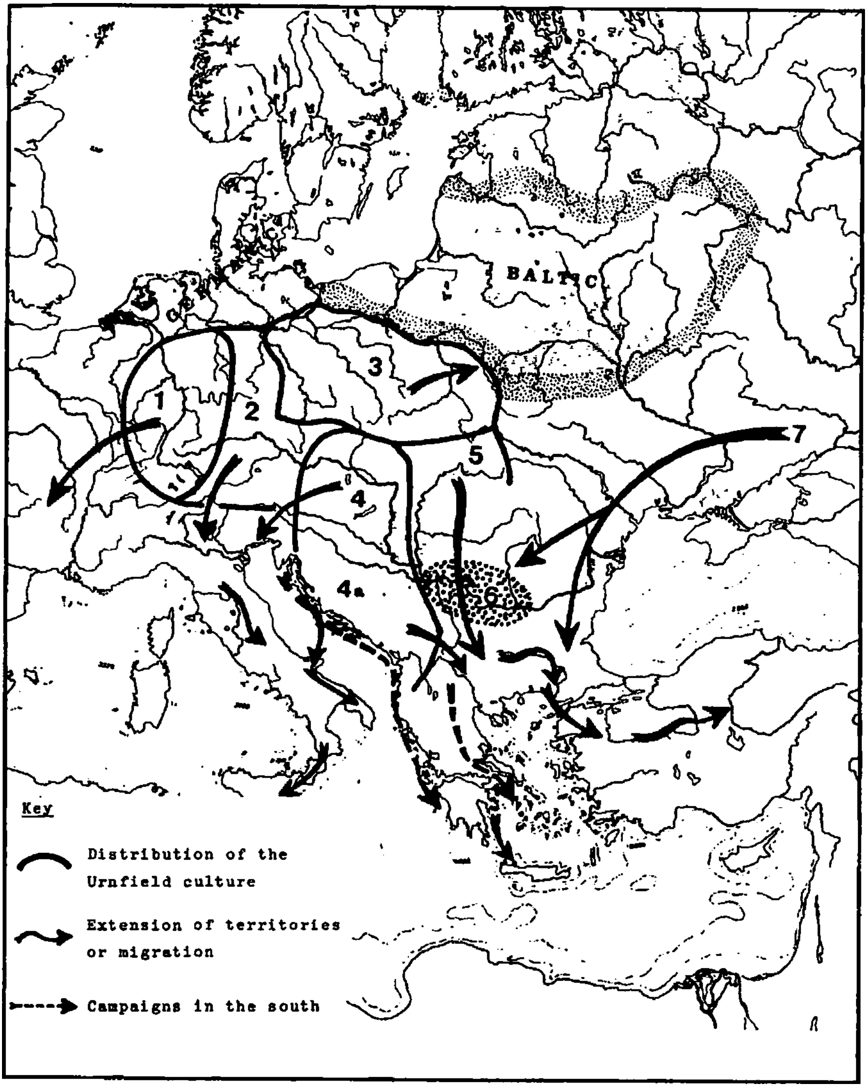
By the 17th-16th centuries BC, this culture had become a military power. Swords and bronze spearheads appeared in addition to spoked wheels (speaking for the existence of war chariots) and elaborate harnesses. Hillforts of Moravia, lower Austria, and southwestern Slovakia were fortified by thick stone walls and ditches. The Middle Danube region was the cradle of unrest which took place in the subsequent Middle Bronze Age or Tumulus period, *c.* 1500 BC.

The Tumulus expansion into east central Europe truncated the long gradual development of the Encrusted Pottery culture in western Hungary and southwestern Yugoslavia, the Vatya culture in central Hungary (a hybrid of Encrusted Pottery and Nagyrév), the Otomani in Transylvania, and Periam in southeast Hungary and western Romania. The extension of the Tumulus people to Bosnia and Montenegro in the south is essential to the question of the formation of the Illyrian family. Simultaneously, the area north of the Adriatic was settled by Tumulus people from the north, which may mark the birth of the Venetic linguistic group, related to Italic and Illyrian. The River Po valley in northern Italy was also settled by people from the Middle Danube basin. This started the so-called "Terramare" culture, followed by the symbiosis in Italy of the indigenous Apennine culture with the central European.

The mélange of Tumulus and Otomani cultures produced a "Gava" culture of the early Urnfield period, which extended down to the Morava basin in southern Yugoslavia, and subsequently to Bulgaria and Turkey. These movements seemingly are linked with the Phrygians and thus are crucial to the question of the Phrygian genesis in central Europe. Notwithstanding remarkable territorial extensions, the continuum of the central European culture from the Tumulus into the Urnfield period is shown by the stability of local provinces, each developing local ceramic and ornament style. One province was along the Rhine; another was in the upper Danube region in modern Bavaria, upper Austria, southern Bohemia, and southern Thuringia. The third, termed Lausitz, spread over eastern Germany and western Poland. The fourth, the "Middle Danube" group, was in lower Austria, Moravia, and western Slovakia (Map 5).

In the 14th-13th centuries BC, all these groups showed extraordinary vitality in metallurgical productivity. Central Europe, with its hub in the Middle Danube basin, became a menacing military power of the continent. Eloquent symbols of this era are elaborate royal burials of the Early Urnfield times, the 13th century BC, in Slovakia and Moravia (Čaka, Očkov, Velatice). The entire Balkan peninsula was now under the sign of military power of the central Europeans. The appearance of central European bronzes (flange-hilted swords, flame-shaped spearheads, median-wing axes, and violin bow fibulae) in Greece is coincident with the catastrophe of the Mycenaean culture at the end of the Late Helladic IIIB period. There is only one possible explanation: these bronzes (which in central Europe typify the equipment of chieftains and the warrior nobility) were brought to Greece by central European warriors.

Neither the Illyrians nor Phrygians nor their Armenian relatives settled permanently in Greece, but their participation in campaigns against the Mycenaean world cannot be doubted. After the destruction of the Hittite Empire, the Phrygians settled in Anatolia. The linguistically related Armenians must have shifted farther east to eastern Anatolia. During the 13th-12th centuries BC, the culture of Italy was drastically reshaped. Cremation rites became almost universal. Ties with the north were strengthened. Repeated Urnfield settlement from Bavaria and upper Austria across the Alps is observable in the area of Milan. Elsewhere, pockets of the indigenous Apennine culture still existed; its shifts to other areas also are traceable (in the Aeolian islands, for instance). Finally, the Apennine culture disintegrated. Messapic speakers appeared in Apulia and Calabria. The Siculi started a new ("Pantalica") culture in Sicily. Both are considered, from the linguistic point of view, to be of Illyrian stock.


BALTIC
1
2
3
4
4a
5
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Key
Distribution of the Urnfield culture
Extension of territories or migration
Campaigns in the south

Map 5: "Tumulus-Urnfield" groups of central Europe and migrations in the 15th and 13th-12th centuries BC. 1) the Rhine group; 2) Bavarian-upper Danube group; 3) Lausitz group; 4) Middle Danube group and 4a, its extension south in the 15th century BC; 5) Gava group and its migration southeast in the 13th and 12th centuries BC; 6) Gîrla Mare culture of Old European character; 7) Timber-grave-Sabatinivka (Proto-Scythian) incursion from the east which resulted in the formation of Noua and Kosladzheni complexes in east central Europe.

To the west, eastern France (upper Rhône and Yonne basins) was colonized in repeated waves from the western Tumulus-Urnfield group in the upper Rhine basin (Sandars 1957:364, map VII). Southern France and Iberia were settled by the late Urnfield people in the 9th-8th centuries BC. These western migrations are synonymous with the beginning of Celtic speakers in western Europe (for Celtic toponymy in France and Iberia see Piggott 1965, figs. 95-97; Powell 1958). The situation differed in the northwestern tip of the Iberian Peninsula, where the entering of Celtic tribes resulted in an amalgamation with the indigenous bascoid Pyrenean types (Wilbur 1980:3-13).

The territorial expansions from central Europe to the west, south, and southeast were of enormous consequence to ethnic formations of Europe. In each area where central Europeans diffused, the local substrata played a major role in the final formation of the culture. Thus the Únětice-Tumulus-Urnfield homeland produced many more offshoots than is reflected in the territorial grouping during the Tumulus period.

In summary, the Únětice-Tumulus-Urnfield territory was a homeland to a host of Indo-European groups, most of which are known to have developed into separate cultures and languages only after they branched from the core and were hybridized with the local substratum culture.

Among the linguistic families with roots in the Únětice-Tumulus-Urnfield culture are: Celtic, Italic, Venetic, Illyrian and its sub-groups Messapic and Sikel (Siculan), Albanian, Phrygian, and Armenian. Proto-Tocharian should also be placed in central Europe, as the linguistic relationship between Tocharian and Germanic, Slavic, and Baltic suggests.

Whether Slavic can be derived from the Lausitz group of the Urnfield culture (as Polish archaeologists believe) is debatable because the Lausitz culture was largely destroyed by Scythian attacks *c.* 525 BC, and its remains were absorbed by the western Baltic Face-urn culture. Even if the hypothesis of Toporov (1961), that Proto-Slavic developed from the southwestern Baltic dialects, is feasible, it is difficult to see the symbiosis of the Face-urn culture with the Lausitz. It is more plausible to look for the earlier Slavic cradle north of the Carpathians, in Galicia, southern Volynia and Podolia. Here, an early Slavic toponymy is found, and a cultural continuum from the North Carpathian Corded Pottery culture to the Komarov-Chernoles complex during the Bronze and Early Iron Age is rather clear (Gimbutas 1971:21ff.). The closest relationship between the Slavic and Baltic hydronymy is found southwest of R. Pripet. Recent studies on Slavic hydronymy also suggest the region north of the Carpathian Mountains, particularly Galicia (Udolph 1979a and b, 1980).

Conclusions

The formation of the Indo-European speaking families in Europe was in constant flux from the 4th millennium BC to the end of the Bronze Age.

Notwithstanding the repeated process of convergence and divergence, several stages, crucial for the Bronze Age ethnic formations, can be singled out.

1. There is strong linguistic and archaeological evidence for an undifferentiated or insignificantly differentiated European stage of the Indo-Europeans. Chronologically, this applies to the newly formed culture groups of the second half of the 4th millennium BC in east central Europe (the Globular Amphora-Baden-Coţofeni-Ezero complexes composed of Kurgan and Old European elements).

2. The late Globular Amphora-early Corded Pottery extension at *c.* 3000-2800 BC to northwest and northeast Europe resulted in the splitting off of the northern Indo-Europeans. The hybridization with the substratum population produced the Germanic and Baltic speaking families. The infiltration of Greece from southern central Europe (possibly by the Baden-Vučedol culture) and the mélange with the Early Helladic II-III culture of the 3rd millennium BC resulted in the formation of the Mycenaean Greeks.

3. The core of remaining Indo-European groups was the Únětice-Tumulus-Urnfield Bronze Age culture of central Europe. The territorial extensions around 1500 BC (the Tumulus expansion) and again around 1250 (the Urnfield expansion) from central Europe to Italy and the Balkan Peninsula and the resultant mélange with the substratum cultures (in most cases already Indo-Europeanized, such as Encrusted Pottery, Otomani, and Vatya) ended in the formation of the new families. Among them: Italic, Venetic, Illyrian, Albanian, Phrygian, and Armenian. The shift of the Urnfield people from the Upper Rhine basin brought the Proto-Celts to France and Iberia.

4. Using the Baltic group as a model, it has been demonstrated that without a linguistic base the identification of early Indo-European speaking families is hardly possible and, vice versa, without archaeological evidence, the studies of hydronymy and toponymy remain inconclusive. The results of physical anthropological research in answering ethnogenetical questions are of utmost importance to prove or disprove migrations and the persistence of substrate elements.

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Accounting for a Great Change*

The puzzle of the origins of what is now the world's largest linguistic family has occupied the minds of scholars for the past 200 years. Indo-Europeanists have concentrated on reconstructing the Proto-Indo-European language, and on mythology; or on the archaeology of the late Neolithic and Early Bronze Age: two fields which have long been at odds with each other. The title of Colin Renfrew's book suggests a mating of Indo-European linguistics with archaeology, but in fact he hardly suggests that co-operation between the two might be useful. He largely denies the validity of applying linguistic data to archaeology, and does not consider the findings of comparative Indo-European mythology to be useful in reconstructing Proto-Indo-European society, ideology, and religion. In other respects, *Archaeology and Language* is attractively written, and contains information on the history of Indo-European studies, and on Indo-European languages in general and in particular.

The main thesis, presented as the key to the solution of the Indo-European problem, is that the earliest agriculturalists of Europe, Anatolia, and southwest Asia were Indo-European speakers, whose language spread with the diffusion of agriculture. In order to make this hypothesis work, Renfrew has chosen to ignore every source that would speak against it. According to him, the first Indo-European languages came from Anatolia (Turkey) to Europe around 6000 BC (7000-6500 BC if we think in terms of calibrated radiocarbon chronology) with the first farmers. Anatolia is thus suggested as the homeland of the Proto-European culture, but no arguments are given to prove that the Anatolian Neolithic (such as that found at Çatal Hüyük) was Indo-European. Nor is the European Neolithic culture – its social structure, religion, or architectural, ceramic and textile traditions – defined and explained as Indo-European.

In my own view, the Old European, Old Anatolian, and Indian (Harappan) Neolithic civilizations stand in opposition to the patriarchal, patrilinear, and warlike culture of the Indo-Europeans. Renfrew does not distinguish the main ingredients of those civilizations nor the many two-way accculturative processes between them and the Indo-Europeans; the author believes, rather, in a linear development from the Neolithic. Indo-Europeanists would certainly not agree that the Neolithic society, with its balanced, non-hierarchical model of human interaction, was a Proto-Indo-European society, nor would religious historians accept that the Neolithic Goddess religion was Proto-Indo-European. The Indo-

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*This review of Colin Renfrew's book, *Archaeology and Language,* was first published in the *Times Literary Supplement,* June 24-30, 1988:714 and is reproduced here by its permission.

European's male-dominated and sky-oriented pantheon of warrior gods could not have developed directly from the matristic pantheon of chthonic goddesses. Archaeology and comparative mythology alike testify to a collision between two social structures, two ideologies, and two very different symbolic systems.

One of the lacunae of the book, indeed, is that it fails to deal with the question of religion, which was the most important facet of human life in the Neolithic, and that it irresponsibly ignores those studies on the subject which do. The assumption that Anatolian and European Neolithic religion was Indo-European implies that Minoan religion was so also since the latter was a continuation of it – an assumption which defies any possibility of rational criticism.

Renfrew's hypothesis is in disharmony with the findings of Indo-European scholarship. First, we need to understand what is Proto-Indo-European on the basis of the linguistic and mythological data, and only then attempt to find a prehistoric culture which matches our requirements. Renfrew has done it the other way around. That the process of agriculturalization did not mean Indo-Europeanization is shown first by the non-Indo-European belief system of the early agriculturalists and second by the fact that their agricultural terminology is largely non-Indo-European. Research has demonstrated that most of the names for cereals and legumes were taken over by the Indo-Europeans from the local Old European languages, while there are often two sets of names for domesticated animals in European languages, one Indo-European, the other not (such as the names for "pig" in the Celtic languages and in Lithuanian). The same is found in the terminology of textile and ceramic crafts.

Nor can we ignore the archaeological story of south Russia and beyond. In 1956 I launched my "Kurgan hypothesis": the Kurgan ("round mound") people, who appeared in the middle of the 5th millennium BC at the borders of Old Europe and infiltrated east central Europe in several waves between 4500 and 3000 BC, must have been Proto-Indo-European speakers. Their incursions caused the transformation of Old Europe, and their mobility was enhanced by their horsemanship. The Kurgan hypothesis is supported by the majority of linguists, mythologists, and ethnologists, as well as by accumulating archaeological data. Renfrew rejects it but is not willing to look at primary archaeological sources. Instead, he offers a series of entirely unsubstantiated statements. In order to make the early Kurgan people into Indo-European speakers (since there can be no doubt that Indo-Iranians are direct descendants of the Kurgan), Renfrew has had to derive the Kurgan tradition from Old Europe, from the highly sophisticated Cucuteni-Tripolye culture in northeast Romania and the western Ukraine. Among the nonsenses he promotes are that Kurgan pastoralism developed from this culture *c.* 3500 BC; that the initial colonization of the western part of the steppes took place from the west; that the early Kurgan pastoralists were not horsemen; and that the warlike values of the Proto-Indo-Europeans cannot be proved.

The agricultural people in the middle Volga-Ural region and north of the Caucasus mountains (the "Samara" and "Khvalynsk" groups), who had a knowledge of the domesticated horse and horsemanship, are known at least from 5000-4500 BC, a much earlier date than Renfrew postulates. Recent discoveries of horse bones in southern Russia and northern Kazakhstan suggest this region as a most likely locus of the domestication of the horse. The radiocarbon dates place the Volga Neolithic domesticated horse in the mid-7th millennium BC. The horse cult (including sacrifice), so characteristic of the Proto-Indo-European culture, is also evident in the same region from the 5th millennium BC. According to Renfrew, only in the 3rd millennium (two millennia later!) is there evidence that the horse was used for riding. The failure to see the enormous importance of the horse and horse-back-riding from the mid-5th millennium onwards largely explains his misinterpretations of the Kurgan movements. It is my contention that the Proto-Indo-Europeans expanded to the west, to the south and to the east primarily because of the horse, whose domestication must have led to the increase in mobility, wealth, and importance of males in society. The Kurgan society of the 5th millennium was already patriarchal and hierarchical, and the graves of men equipped with prestige items suggest the accumulation of wealth in the hands of tribal leaders and other important males. Weaponry, with bows and arrows carried in quivers, spears, shields, and long sharp knives or knife-daggers, witnesses the focus on the arts of war.

Renfrew has not taken into account the importance of the Neolithic culture in the forest-steppe region of the middle Volga-southern Urals, dating back to the 7th millennium BC. This eastern Neolithic differed markedly from the fully developed agriculture, horticulture, and viticulture of Anatolia and southeast Europe. Its emphasis was on animal, not plant, domestication; horse and cattle predominated, in addition to woolly sheep, goats, pigs, and dogs. From linguistic research we know that Proto-Indo-Europeans were acquainted with certain cereals, and with sowing, reaping, and ploughing. This stage of economy fits with reconstructed Proto-Indo-European words for domesticated animals, plants and foraging, but not with the Neolithic of Anatolia and southeast Europe, with its several types of wheat, oats, rye, peas, lentils, vetch, oil, olives, vines, etc.

Renfrew has not found it necessary to talk about the most traumatic period of central European prehistory, *c.* 4500-2500 BC, which saw the transformation from a peaceful gynandric to a martial androcratic society, from matrilineal to patrilineal systems, from a female-dominated pantheon of gods to one which was male-dominated. He offers no explanation why hillforts and other fortified settlements appeared, why the administrative system changed rapidly, or why large villages and towns, comfortable houses, temples, sculptures and cult paraphernalia all disappeared. Astonishingly, he fails also to discuss the formation of new cultures, in which we can easily observe the process of hybridization of two social structures and symbolic systems, such as the Baden-Ezero culture between Poland and western Anatolia, or the Globular Amphora culture north of it. He has not considered the total change in cultural boundaries to be relevant to the Indo-European problem. The spread of a new language and religion must have been facilitated not only by horses, vehicles, and weapons, but by the androcratic order. Indo-Europeanization cannot be separated from the greatest change in human consciousness in European prehistory; it is entirely unconvincing that the Indo-European language should have been spread across Europe by peaceful farmers bringing seeds and sheep.

Around 3000-2800 BC, European cultures experienced a new Kurgan intrusion. In northeast Hungary, northern Yugoslavia, Romania, and Bulgaria, hundreds of graves have been discovered under low barrows, as in southern Russia, and have been unanimously interpreted as alien by archaeologists. The influence of this wave is likewise played down by Renfrew. The spread of the already Indo-Europeanized central European population (the Corded Ware culture) to the northwest and northeast, as well as of the Bell Beaker people to the west, is hardly explainable without some insight into the role played by this new element from the east. The subsequent development was of stabilization and the formation of local culture groups, some of which continued in the same regions into the Iron Age and historic times (Germanic and Baltic, for example). A solution to the problem of Indo-European origins demands not only a mastery of linguistic, mythological, and archaeological sources, but also a poetic sensibility. Colin Renfrew's "simple solution," which makes non-Indo-European agriculturalists in Europe and Asia speak Proto-Indo-European, with all of its implications for the social structure and religion of the indigenous Neolithic population, is a gross distortion of prehistory. I can recommend this book neither to the scholar nor to the general reader interested in the subject.

Review of *Archaeology and Language* by C. Renfrew*

History, comparative mythology, linguistics, and archaeology teach us that the Indo-Europeans were patriarchal, patrilineal, a people strongly focused on the arts of war. Their horse-riding gods were warriors also, their power symbolized by the masculine Blade. Renfrew proposes to invert things: the early farmers of Europe and Asia were Proto-Indo-Europeans. If we accept this, "Indo-European" should be redefined, since the Old European/Old Anatolian/Old Indian agriculturalists were gynandric and peaceful. Their communities express a nonhierarchical partnership model of human interaction, with harmony between man and nature and between the sexes. Their religion was that of the Goddess. Is it possible that these were Indo-Europeans?

According to Renfrew, the first Indo-European languages came to Europe from Anatolia around 6000 BC, together with the first domesticated plants and animals. This, he suggests, is the key to the solution of the Indo-European problem. He has not raised the crucial question of describing the culture and, more important, the religion and social structure of these early agriculturalists. No evidence is offered that the Neolithic culture of Europe (in my terminology non-Indo-European "Old Europe," *c.* 6500-*c.* 3500 BC) was Indo-European in the sense heretofore understood. It is difficult to furnish arguments for such a hypothesis when every temple and tomb-shrine, every statue and wall painting, every painted sherd and inscribed cult object we discover cries out to us that this culture of art, of love of life, and of balanced partnership stood in opposition to all of what we know as Indo-European.

If the earliest agriculturalists of Europe were Indo-European speakers, why are basic agricultural terms non-Indo-European? And why is the terminology associated with religious worship, especially the names of goddesses, notably non-Indo-European? Renfrew does not ask these key questions. He has chosen two Neolithic figurines (pl. 9) to illustrate Neolithic religion, and these are to be understood as "Indo-European" goddesses from the end of the 7th millennium BC! It follows that Minoan religion is also Indo-European, since it is a continuation of the Old European/Old Anatolian religion. Such proposals outstrip any possibility of rational criticism.

It is astounding that Renfrew, long the leading voice of antimigrationism in prehistoric Europe, now speaks of the migration of farmers from east to west and from southeast to northwest. Indeed, this is the route of diffusion for the food-producing economy. Small immigrant groups of small-statured

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Mediterranean people with sheep and grain may have arrived on the Greek mainland by boat across the Aegean from Anatolia during the first half of the 7th millennium BC and from there moved north to Macedonia and even as far as the Carpathians. But the agriculturalization of the north and west of southeastern Europe was a process of acculturation, a mixture of local populations and traditions with prominent influences from the southeast. This applies to the cultures of the Danubian basin, the Iron Gate region, the Dniester-Bug, the Dnieper-Donets, and all of west-central and western Europe.

That agriculturalization was not Indo-Europeanization is shown first of all by the non-Indo-European belief system found among the earliest agriculturalists of Europe. At the time of the transition from a food-gathering to a food-producing economy there was no corresponding change in the structure of symbolism, only an elaboration of the old. The main attributes of the Great Goddess – creation of life, increase, death, and regeneration – continued from the Upper Palaeolithic into the Neolithic. Only at the demise of Old Europe does a drastic transformation in the symbolic system occur, concurrent with the change from a matrilineal (but not matriarchal) and gylanic or gynandric, balanced order to a patrilineal, patriarchal, and androcratic one. Furthermore, the linguistic substratum of the Europe attested to us is non-Indo-European. That substratum is not Mesolithic, as Renfrew sees it; it reflects a Neolithic economy and technology. For example, most of the names for cereals and legumes cannot be accounted for by Proto-Indo-European as we know it but were taken over by the Indo-Europeans from the local European substrata. Thus the common names for rye, barley, oats, beans, lentils, peas, vetch, poppies, flax, and hemp are known only to the European branch of Indo-Europeans. Some of them, such as names for beans, peas, and vetch, are known only in the south, in Greek, Latin, and Albanian. The word for "apple" is also non-Indo-European and was borrowed from the northern European substratum in the north and from a Mediterranean substratum in the south (Hamp 1979). Significant for substratum studies is the fact that in the Indo-European languages of Europe, domesticated animals and birds often have two sets of names, non-Indo-European and Indo-European. For instance, non-Indo-European names for "pig" (Lithuanian **keul-* and **kuili-* and Celtic **mokku-*, **suku-*, **banu-*, and **turko-*) have been reconstructed as going back to central and northern European pre-Indo-European substrata; they are unmatched elsewhere in Indo-European (Hamp 1987). On the other hand, **pork'o-* and **su-* are original Indo-European terms designating 'piglet' and 'sow' (Gamkrelidze and Ivanov 1984:593). Contrary to the existing linguistic data, Renfrew declares, "If the Proto-Indo-Europeans were familiar with domesticated sheep, goats or cattle, then they must certainly also have been acquainted with wheat, barley and peas and also a range of other animal species" (p. 84). Except for **mel-i-*, 'a "ground" cereal, millet', **yewo-*, 'a cereal used for fermentation', and **pūro-*, 'a grass or spelt wheat', there are no well-attested Proto-Indo-European words for cereals. There is no linguistic evidence for Proto-Indo-European arboriculture and viticulture. The Proto-Indo-Europeans were acquainted with some cereals, as well as with ploughing, sowing, and reaping. They were also acquainted with forest foraging. This evidence cannot be applied to early European and Anatolian farmers, who were full-fledged agriculturalists (Gimbutas 1986).

In addition to the linguistic substratum, there is a clear non-Indo-European substratum of traditions, notably in ceramics, architecture, sculpture, copper metallurgy, and textiles. The sophisticated painted pottery of Old Europe can in no way be compared to that of the Kurgan tradition; it vanished from east-central Europe after the first wave of Kurgan infiltration together with the sculptural art, temple building, frescoes, ritual paraphernalia, and a distinctly European copper metallurgy without weapons. Such drastic changes cannot be explained in economic terms. Old European traditions continued only in non-Indo-Europeanized southern Europe and reached their zenith in the Aegean islands and Crete. Neolithic Old Europe had a powerful and elaborate textile tradition (geometrically decorated textiles are known from Swiss dwellings and passage graves in western Europe) which had nothing to do with the Indo-European tradition. Central Europe must have been the center from which radiated the most elaborate textiles in the Old World. Here we find bands, triangles, zigzag borders, checks, and checks within checks, all made with a supplementary weft technique similar to what we think of today as brocade. The exuberantly decorated textiles of the same tradition continued in Minoan Crete and Thera (see Barber 1988 and, on Proto-Indo-European notions of cloth and clothing, 1975). The Indo-European clothing tradition is distinguished by wrapping (cloaks), pinning, belting – the opposite of what is seen on Old European and Minoan figurines and frescoes.

Europe from the beginning of agriculture to the Christian era consists of two very different strata, Old European and Indo-European. What is understood today as "Western civilization" is derived from the merging of the two. I see many two-way acculturative processes. The main ingredients of every Indo-European culture in Europe may be described as substratal and superstratal. There was a collision of two ideologies, two religions, and two social systems. Indo-European culture did not simply evolve from Old European civilization, and the same applies to Anatolia and India (on the transformation of European and Anatolian culture *c.* 4500-2500 BC and its legacy, see Gimbutas 1980-81). Renfrew's "key to the solution" of Indo-European origins – making non-Indo-European agriculturalists speak Proto-Indo-European – is a gross distortion of European and Asiatic prehistory.

Dumézil's life work laid the foundation for comparative Indo-European mythology. His studies have shown that mythology reflects an ideological structure that is also manifest in social organization. It cannot be doubted that the Proto-Indo-Europeans shared a mythology, social forms, and institutions, and this shared construct is not of recent formation as Renfrew tends to see it. It has been shown that the specific correspondences between many Indo-European legends and myths are far too detailed to be explained by a phylogenetic theory or by one of intracultural loans. The specific features of hieratic and symbolic structure and the characters of the main divinities are found in the easternmost and westernmost branches of Indo-European and must reach back to the protoculture. Any doubts in this regard are dispelled by Puhvel (1987:38):

> The study of hieratic entrenchment is indeed a basic tool of Indo-European comparative mythology. There is a great amount of specific social, religious, and legal terminology the eastmost and westmost branches of Indo-European have in common. These accordances between Indic and Iranian on the one hand and Italic and Celtic on the other reflect independent survivals of proto-Indo-European lore.

Indic, Iranian, Baltic, Italic, Celtic, and Scandinavian are the mainstays of reconstructed Indo-European myth. Greece and Anatolia (Renfrew's "Proto-Indo-European area") contribute relatively little to the reconstruction of Indo-European religion and myth; there the Old European mythic substratum prevails. To discard the results of comparative mythological research is to rob archaeology of a rich treasure.

Contrary to Renfrew, I view the bearers of the Kurgan culture of the 5th and 4th millennia BC as Proto-Indo-Europeans whose influence and infiltrations in several waves into east-central Europe between 4500 and 3000 BC transformed Old European culture. The hybridization of two social structures and symbolic systems is ignored by Renfrew, the formation of hybrid Cernavoda/Baden/Coţofeni and Globular Amphora cultures in the second half of the 4th millennium BC not even mentioned. I consider these cultures already Indo-Europeanized and the base from which European Indo-European branches developed (Gimbutas 1980-81, 1986).

Renfrew's assertions (1) that the steppe pastoralists developed from the Cucuteni-Tripolye culture, *c.* 3500 BC, (2) that the initial colonization of the western part of the steppes took place from the west, (3) that the early Kurgan pastoralists were not riding horses, and (4) that the Kurgan people were not possessed of a warlike spirit (pp. 95, 97, 202) are entirely unsubstantiated. These assertions reflect an ignorance of primary archaeological sources from the South Russian, Ukrainian, and Moldavian steppe and forest-steppe region and of recent work by Soviet scholars.

Kurgan I pastoralists in the middle Volga-Ural interfluve and north of the Caucasus Mountains (the Samara and Khvalynsk groups) with knowledge of the domesticated horse and horsemanship are known from a much earlier time than Renfrew postulates – at least the middle of the 5th millennium BC. The extension of Kurgan I pastoralists into the Dnieper steppe (the territory of the Dnieper-Donets Neolithic culture) is known as Stog or Srednij Stog II. The further thrust west into the steppe of Moldavia and the lower Danube (Gumelniţa-Karanovo territory) is known as the Suvorovo variant. The westward extension reached as far as the middle Danube-upper Tisza area in eastern Hungary, across the Karanovo and Vinča territories into the Tiszapolgár. I described the first east-west wave into east-central Europe in 1977, and I see no need to change my opinion, since new evidence confirms the east-west movement in the middle of the 5th millennium or soon thereafter and certainly does not support a west-east movement. The Kurgan I people appear in east-central Europe as a foreign body and fully formed. Their burial rites (in pits under low, round mounds), pottery, and weapons (large flint knife-daggers, spears, arrows) are of an entirely different tradition with no known prototypes in Europe. This wave introduced to east-central Europe not only the domesticated horse (Bökönyi 1987) but also the cult of the horse, which is characteristically Proto-Indo-European. Typically, the rich graves of chieftains or important warriors, such as those at Suvorovo in Moldavia and Casimcea on the bank of the lower Danube, were equipped with horse-head scepters carved out of stone. Twenty-five of these scepters have been found between the Danube, the Caucasus, and the Middle Volga; some are schematic, some more naturalistic, with line engravings that suggest bridles. The most recent addition to the evidence for horse sacrifice is the 1986 discovery of a horse skull cut from the neck in a Tiszapolgár pit in Tiszaföldvár, northeastern Hungary (S. Bökönyi, personal communication, March 1987). The cult of the horse is attested in the Middle Volga basin from the period that predated the Stog and Suvorovo. There, at S'ezzhee, in the district of Kuybyshev, two horse skulls placed on a sacrificial stone slab were discovered in a grave. Miniature figurines of horses carved out of flat bone were also found (Vasil'ev and Mat'veeva 1976). Representations of horses in bone carving are also known from the Khvalynsk group in the district of Saratov (Vasil'ev 1979). Horseback riding, suggested by a considerable number of bridle cheek-pieces of bone, antler, and wood (Telegin 1986; Černjaxov and Smaglii 1983), very likely coupled with fighting from horseback, must have played a paramount role in the development of mobility and trade among the Kurgan I peoples and their spread westward. It is inconceivable that Renfrew should minimize the importance of the horse. According to him, only in the 3rd millennium is there "some evidence that the horse was used for riding." The two millennia between *c.* 4500 and *c.* 2500 BC make a real difference. The Proto-Indo-Europeans were able to expand to the west, to the east, and to the south primarily because of the horse. Renfrew has also failed to stress the enormous importance of the horse and horseback riding in his treatment of the Bell Beaker phenomenon.

The hypothesis that Kurgan cultures originated about 3500 BC in an area bordering on the region occupied by Cucuteni-Tripolye peasants, that is, in the western Ukraine, an idea borrowed from Goodenough (1970), is an entirely unsubstantiated speculation and therefore cannot have "revolutionary consequences for the homeland theory" (p. 97). Furthermore, in order to make the Kurgan people speak Indo-European, Renfrew says that their language "must . . . have been derived from that of Cucuteni and Tripolye peasants" (p. 202). In my view, on the contrary, this creative and art-loving civilization perished in the course of the second half of the 4th millennium BC. The area was kurganized through subsequent pressure from the east.

The Suvorovo kurgans northwest of the Black Sea are dated by imported painted Cucuteni $A_{1\text{-}3}$ pottery to the period 4500-4200 BC (calibrated chronology). Soviet scholars who deal firsthand with the Kurgan I (Suvorovo) materials unanimously speak of eastern roots in the Volga-Ural region north of the Caucasus (see the recent synthesis by Dergačev 1986:65-74).

In relation to the roots of the Kurgan culture, the problem of the origins of the Neolithic economy in the forest-steppe region of the Middle Volga-southern Urals, which dates back to the 7th millennium BC, cannot be ignored (see recent work on the Neolithic economy and especially on animal husbandry by Vasil'ev 1979, 1981; Matjušin 1982; Petrenko 1984). The earliest Indo-European words for domesticated animals (*_k'uon-_ 'dog', *_owi-s_ 'sheep', *_g_^{w}_ou-s_ 'bovine *_pek'u-s_ 'livestock, movable wealth, cows and sheep', *_sū-_ 'swine', *_pork'o_ 'piglet') may reflect the animal husbandry of the Neolithic Volga-Ural region. The sheep of eastern Europe are larger and woollier than Old European Neolithic sheep. The word for 'wool' is clearly early Proto-Indo-European. The woolly sheep was introduced into Europe by the Kurgan people (Bökönyi 1987). The Proto-Indo-European word for 'horse' *_ek_^{w}_o-s_ seems to have been coined later than the terms for the other domesticated stock (that is, with the domestication of the horse), since it is a thematic noun and appears to be a derivative. Pastoralism derived from an earlier farming culture in which livestock was an original element. This region is included in the distribution area of the wild horse subspecies tarpan _(Equus ferus gmelini Antonius),_ from which the first domestic horses derived. The earliest horse domestication could have taken place between the Dnieper and northern Kazakhstan, but recent discoveries support the Middle Volga-northern Kazakhstan. Kurgan sites in this region from the period between 5000 and 2500 BC have yielded enormous numbers of domesticated horse bones, which constitute 80-90 percent of all domestic animal bones (for instance, at Petropavlovsk, northern Kazakhstan, 100,000 horse bones were recently discovered [S. Bökönyi, personal communication, 1987]). The domestication of the horse in the Volga basin probably began no later than 5000 BC. As already mentioned, the horse cult is evidenced from 5000-4500 BC. The cult of oxen also existed at that time, as can be judged from the double ox-head figurines of bone in the cemetery at S'ezzhee. Sacred pairs of oxen in Indo-European mythologies are associated with the God of the Shining Sky. It should be mentioned that pairs of oxen were found buried with important males in the Baden and Globular Amphora cultures of central Europe, dating from _c._ 3000 BC. At the same time, such figurines suggest the use of yoked oxen and the plough ("yoke" and "plough" are Indo-European words).

The archaeology of the region between the Caucasus and Caspian in the south and the Middle Volga basin in the north is linked to the Near East and the Caucasus. Linguistic borrowings by Proto-Indo-European from Kartvelian and Semitic would harmonize very well with this view. It is not likely that the Kurgan hypothesis can be discredited.

Archaeology and Language is an effectively written book, but one with too much rhetoric and too little substance. Its notions concerning the Proto-Indo-Europeans are simply fictions, devoid of support from linguistic, comparative mythological, or archaeological sources. The solution of the problem of Indo-European origins is much more delicate and challenging than the tissue offered us by Renfrew. I hope that this book will serve as an impetus for more substantial interdisciplinary research.

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The Collision of Two Ideologies*

The Indo-European culture, with its patriarchal and classed social structure and its religion of warrior gods, was superimposed on Europe in several stages: first in central Europe in 4500-3000 BC, it spread to the north and south in the first half of the 3rd millennium BC, coming later to the Aegean and Mediterranean islands. From the 3rd millennium on, hybridized cultures and mythologies emerged.

The culture that the Indo-European culture was superimposed on, Old Europe, with its tens of thousands of figurines, beautifully painted pottery, frescoed temples, and conveniently located towns, disappears. It is replaced instead by hillforts and weapons and the emergence of a totally different symbolic system.

The recognition of the collision of two ideologies, Old European and Indo-European, as presented here, is based on my research of some thirty years which can be summed up in the following central points: 1) The definition of distinct Neolithic and Copper Age Europe of *c.* 6500-3500 BC as Old Europe, opposed to what is known as "Indo-European"; 2) the reconstruction of the complex religious and philosophical system of goddess-worship which was central to Old European cultures; 3) the recognition of the clash between Old Europe and the Proto-Indo-European Kurgan culture of Volga Neolithic origin and the three successive infiltrations of the Kurgan horse-riding people into east central Europe in the period between 4500 and 3000 BC, which led to the transformation of Old Europe: the change of the social structure, transition from matrilineal to patrilineal order, from learned theocracy to militant patriarchy, from balanced to unbalanced society, from the chthonic goddess religion to the Indo-European male-dominated and sky-oriented pantheon of gods; 4) the formation of the secondary, European, homeland in central Europe, composed of indigenous and Kurgan elements.[1]

European culture, as well as that of Anatolia and southern Asia, has two main constituent ingredients: substratal (Old European) and superstratal (Indo-European), both extant up to the present in language, myth, and symbols. The

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[1] I have published these theses in a series of articles in the *Journal of Indo-European Studies* and elsewhere; and in books: 1) *The Goddesses and Gods of Old Europe, 6500-3500 B.C.,* London: Thames and Hudson, 1974 and 1982 (second edition); 2) *The Language of the Goddess.* San Francisco: Harper and Row, 1989; and *Civilization of the Goddess. The World of Old Europe.* San Francisco: Harper and Row, 1991.

Old European and Indo-European belief systems are diametrically opposed. This fact alone speaks for the collision, *i.e.* the intrusive character of the Indo-Europeans in Europe. There is no possibility of the Indo-European belief system having evolved in a straight line from the Old European. There is also no possibility that the Indo-European society – exogamic, patriarchal, patrilineal and patrilocal, with strong clanic organization and social hierarchization which gave prominence to the priestly and warrior classes – developed from Old European kin-group society which focused on the harmonious interaction of humans in nature, and of men and women with each other as complementary.

Old European symbols are intimately related to the moist earth, to her life-giving waters, to female regenerative organs; they are cyclic as the moon and the female body. In no way could the philosophy which produced these images be mistaken for the sky-oriented Indo-European ideology with its horse-riding warrior gods of thundering and shining sky, or of the swampy underworld, its gods equipped with lethal weapons, its polar (day/night, shining/black, male/female) structuring of the world, its ideology in which female goddesses are no longer creatrixes, but reduced to mere beauties – "Venuses," brides of the sky gods.

Summary of Functions and Images of Old European Goddesses and Gods

The main theme of Old European goddess symbolism is the mystery of birth and death, and the renewal of life, involving not only human life but all life on earth. Symbols and images cluster around the parthenogenetic (self-generating) Goddess. She was the single source of all life who took her energy from the springs and wells, from the moon, sun and earth, and from the animals and plants. Her basic functions were as Giver-of-Life, Wielder-of-Death, Regeneratrix, and the Earth Fertility Goddess, rising and dying with plant life. Male gods also exist, but not as creators: they are guardians or owners of wild nature, or they are metaphors of life energy and vegetation spirit (Table 1).

Summary of Functions and Images of Indo-European Gods and Goddesses

The Proto-Indo-European pantheon of gods was organized to a socially and economically oriented ideology: the prominent sovereign, priestly, and warrior classes were suited to the predominant role of pastoralism in their mixed farming economy, with the special emphasis on the horse. Their principal male gods rode horses and carried weapons. Life-creating and death-wielding functions belonged to the principal male gods. Female goddesses, like the Dawn and Sun Maiden, are not creatrixes, but are brides or wives of male gods. The religion was oriented toward the rotating sun and other sky phenomena, such as thunder

Life-Giving and Life-protecting	**Death-Wielding and Regeneration**
Images:	*Images:*
1. Bird/woman, duck, goose, other water birds. Cuckoo, other birds of spring. Vessel. Menhir.	1. Bird of prey/woman, vulture, owl, crow, raven, white dog, boar.
2. Serpent/woman. Harmless snake.	2. Stiff nude ("White Lady") with owl or snake mask.
3. Anthropomorphic birth-giver (in birth-giving posture). Zoomorphic: bear, deer.	3. Bone with owl eyes.
4. Nurse: bear-masked woman carrying a pouch.	4. Regenerative triangle, axe, hourglass.
5. Madonna: anthropomorphic or zoomorphic (bird, bear, snake).	5. Uterus in zoomorphic shape: fish, toad, hedgehog, turtle, bucranium. Fish/woman, frog/woman, hedgehog/woman.
6. Mistress of animals and plants. Anthropomorphic, flanked by animals and plants.	6. Life column: upward winding snake, tree, water column, phallus.
7. Male guardian/owner of wild animals and forests. Anthropomorphic, bearded. Enthroned holding a hook.	7. Bee, butterfly. Bee/woman, butterfly/woman.

Fertility

Images:

1. Pregnant woman/earth fertility.
2. Metaphors of pregnant belly: hill, stone, oven, grave (oven-shaped, beehive-shaped, round chamber tombs).
3. Sow/woman, sow.
4. Young, rising goddess with upraised arms and Old Hag, dying nature.
5. Rising and dying vegetation god: ithyphallic man, old, sorrowful, enthroned.

Table 1: Functions and Images of Old European goddesses and gods, (based on Neolithic and Copper Age materials, 7th-5th millennia BC).

and lightning. Their sky gods shone "bright as the sky." In Bronze Age representations they carried shining weapons – daggers, swords, and shields – and were adorned with copper or gold chest plates, gold or amber discs, and copper-plated belts.

On the other hand, the god of death was a frightening dark god of the underworld. The Indo-Europeans glorified the swiftness of arrow and spear and the sharpness of the blade. The touch of the axe blade awakened the powers of nature and transmitted the fecundity of the god (Thunder god); by the touch of his spear tip, the god of death and the underworld marked the hero for glorious death.

Time was conceived as an inexorable onward movement, as a "wheel track." The horse draws the wheel of the four seasons, and of the day, from morning to night. The sky is seen as a hill: the movement of the sun is up the hill and down, as it is drawn in a vehicle (later a chariot), by horses who never tire. The sun in Indo-European languages is called "the runner," "the tireless racer," "the seesaw," or "the horse."

There were three main gods, none subordinated to the others. Each is intimately associated with domesticated animals: horse, bull and he-goat. There was no one Great God as there was one Great Goddess; however, the God of the Shining Sky in some Indo-European mythologies appears as a *"summus deus,"* the most important one. The images associated with this god are the most numerous (Table 2).

The God of the Shining Sky	Thunder-god
Year god, inseparable from the sun – new, young, mature – and the changing seasons, appearing in different shapes in each season. In spring and summer aspects he is a young and beautiful god dressed as king. Creator of vegetation, birds, and domestic animals. Epiphanies: white horse, birch. Weapons: dagger, sword, halberd. Guardian of contracts. God of peace and friendship.	Inseminator of earth. God of Justice. Adversary of the God of Death and the Underworld with whom he fights incessantly with his arrows or axes. Imagined as a middle-aged red-bearded man. Epiphanies: bull and he-goat, oak tree, rowan. Weapons: axe, bow and arrow.
Satellites: ***Moon God*** The night aspect of the God of the shining Sky. Warrior. ***The Twins*** Horses or anthropomorphic. ***Sun Maiden*** Daughter of the Sun God, heavenly bride. ***Dawn*** Beauty, goddess of love. Epiphanies: mare and cow. ***The brother or servant of the Dawn*** Herder of cows ***Heavenly Smith*** Hammers a new sun.	**God of Death and Underworld** Cruel and angry god of death imagined as an old man or a dark god. Creator of ugly animals and birds of prey, coniferous trees, and roots. Animals: stallion and bear. The usual epiphany in fight with Thunder-god: monstrous serpent hiding in waters. Weapons: spear, loop of cord for hanging. God of contracts.

Table 2: Functions and images of Proto-Indo-European gods and goddesses based on comparative Indo-European mythology and archaeological finds of the 4th-2nd millennia BC.

Summary of Beliefs in Afterlife

The two systems exhibit two very different sets of beliefs in an afterlife.

Old European

A strong belief in cyclic regeneration is reflected in neolithic burial rites. The pervasive idea in grave architecture is Tomb is Womb. Graves are oval, egg-shaped, oven-shaped, uterus-shaped, or anthropomorphic, the latter being conceived as the body of the Goddess. The generative triangle also figures in grave and shrine outlines and architecture. Symbols on stones of megalithic graves are symbols of regeneration, life-giving water, and life energy (cupmarks, concentric circles with central dot, concentric arcs, winding snakes, snake coils, bullheads as uteri, triangles, lozenges, hourglass shapes, zigzags, lunar cycles); or images of the Goddess of Regeneration with labyrinths, vulvas, breasts.

There is a barrier of water between this world and the next, which is crossed by ships, themselves symbols of regeneration. The location of the afterworld is in the West. Life after death is pleasant, enjoyable.

Indo-European

There is a linear continuity from this life to the afterlife. Therefore mortuary houses are built, and the dead take their belongings, tools, weapons, ornaments, according to their rank, to the afterworld. Gifts provide the dead with status. Royal tombs and those of other important members of the society are lavishly equipped. The kings and chieftains are buried with people (wife, servants, children) and animals (horses, teams of oxen, dogs). Death in battle is glorified.

Gifts of food continue to be made after the funeral: necessary to the well-being of the shades.

The otherworld is underground, swampy, ruled by the male sovereign god. It is gloomy, chilly, sterile. The journey to the other world involves a road or a river, and usually a three day period of walking, riding, or travel in chariots. Souls remain there and drift in a pale and passive manner. There is no belief in rebirth or continuity of life energy in other living beings as in Old Europe. Such different beliefs of the Indo-Europeans could not have developed from the Old Europeans. With the formation of the Baden-Ezero culture in east central Europe and the Globular Amphora in northern central Europe in the second half of the 4th millennium BC, the Indo-European mode of burial and beliefs in the other world take root in Europe and gradually replace the communal burial of the Old European type.

The Contrast Between Old European and Indo-European Symbols

The analysis of Old European and Indo-European symbols shows that the two religions and mythologies had entirely different sets of symbols. Both sets are still extant today in the mythologies and folklore of Europe. In Tables 1, 2, and 3, I have given just a few examples, not the whole glossary of symbols. Examples are taken from the animal world, sky bodies, and colors.

Old European

Benevolent snake:
Symbol of life energy in cosmos, and in humans, animals, and plants. Stimulating and protecting the life powers of the family and domestic animals. Snake coil is interchangeable with sun, moon, and eye.
Poisonous snake:
Epiphany of Goddess of Death

Indo-European

Symbol of evil. Epiphany of the God of Death and the Underworld, adversary of the Thunder God.

Table 3: Serpent (snake)

Conclusion

The above summaries of functions and images of gods, of beliefs in afterlife, and the different sets of symbols, prove the existence of two religions and mythologies, the Old European indigenous, inherited from the Palaeolithic, the Indo-European intrusive. Their collision in Europe resulted in the hybridization of two symbol structures. The Indo-European prevailed, but the Old European survived as an undercurrent. Without the insight into the different symbolic structures, the ideologies of the European peoples, and the genesis and meaning of symbols, beliefs and myths cannot be comprehended.

The Fall and Transformation of Old Europe: Recapitulation 1993*

By 4500 BC, the European continent hosted a flourishing group of Goddess worshipping cultures. Over the preceding two millennia, from about 6500 BC to 4500 BC, these cultures had undergone a peaceful evolution, and by the end of this time achieved what could properly be called a Golden Age of Old European civilization. They produced arts and crafts of remarkable quality. Communities achieved populations of many thousands and were laid out in a planned manner. Towns were located at consistently even distances from each other, with larger cities acting as religious and trading centers. Metallurgy was practiced in east-central Europe; artisans produced copper and gold, tools, jewelry and symbols that display a complete mastery of these media. Old European ceramicists produced pottery so refined in execution that it would not be matched for thousands of years. They developed a form of writing which shows the ability to deal with a high level of abstraction.

The focus of life for these peoples was religion: the perpetual functioning of the cycle of life, death, and regeneration embodied by a central feminine force – the Goddess. The tens of thousands of figurines and sculptures, the burial rites, the rich religious symbolism, all attest the ideology of these peoples. The most advanced architecture – two-story buildings – were reserved for temples. Religion pervaded every aspect of life, and even weaving and the baking of bread were included as sacred activities in the temples. The achievements of these ancient civilizations were attained without the use of force. Nowhere in Old Europe is there evidence of warfare. Heavy fortifications are absent, and settlements are located for their proximity to fields and water sources, not for protection from attack. Henge monuments enclosed by ditches and palisades were built for ritual purposes, not as defensive fortifications. Evidence of pitched battle and violent invasions is nonexistent. Nowhere are there buried warriors, with limbs hacked off or spearheads embedded in bones, and nowhere are there signs of glorification of war heroes. The society was gynocentric and matrilineal. The family clan was structured around the clan's women; the older women were especially revered as creators of the clan. In this way, the central role of the women in the family clan reflected the central role of the Goddess in religion.

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*This article was previously unpublished; it was originally intended to be included in Prof. Gimbutas' final book, *The Living Goddess* (ed. Miriam Robbins Dexter, forthcoming), but Prof. Gimbutas subsequently decided to remove this section from the book and include it as her last article in this anthology. The article demonstrates a clarification and refinement of her theories regarding the Kurgan people and the Old Europeans.

Around 4300 BC, the Golden Age of Old Europe in the Danube basin came to an end. The continuity and fabric of Old European society was torn. Many of the thriving settlements, inhabited for hundreds or over a thousand years, were abandoned. The flourishing Karanovo-Gumelniţa, Varna, Vinča, and Butmir cultures vanished. Other cultures were displaced: The Lengyel and Tisza populations of central Europe diffused north into Poland and Germany.

At some sites, the change was dramatic, the cities being abandoned and never reoccupied. At other sites, the change is more ominous: burnt layers attest to fire and destruction and even massacres of people. Some tells are reoccupied, but by different peoples with entirely different pottery traditions, and possessing a different set of religious symbols. At still other sites the change is more gradual, the Old European traditions taking centuries to change.

Along with the shift in population came a shift in economy. In Old Europe, agriculture had been the way of life, although pastoralism – the grazing and herding of animals – was also practiced to a smaller extent. With the movement and decrease of population, the basic economy changed; many fields went fallow and pastoralism increased. Another change that occurred was in the location of settlements. The Old European settlements had been built without fortifications and were located with access to fields as the primary consideration. New settlements were situated on bluffs and hills, alongside river banks – strategic locations where they were safe from attack. Moreover, true fortifications now appear.

The beautiful Old European artistic tradition vanished. The quality of workmanship declined, coarser clays and poorer firing techniques being employed. The change in art reflects a fundamental change in religion. The symbols of the Goddess tradition decreased, replaced by a new symbol system in which solar symbols and weapons became central.

The drastic changes that took place in Europe after 4500 BC can be explained by influence from the outside and the imposition of a foreign culture's belief system and politics. The sudden upheavals in central Europe can only be understood by looking further east, to homelands of another, completely different culture.

The Kurgan Culture of South Russia

Toward the end of the 7th millennium BC, and throughout the 6th millennium, distinctive cultures began to develop in the regions north of the Black Sea, the Caucasus Mountains, and the Caspian Sea. Unlike the Old European cultures farther west, whose economy was based on farming, the early Neolithic cultures in these areas practiced a food-producing economy based on animal domestication (primarily cattle, sheep, and goats). In archaeological literature the early Neolithic groups in these areas are known by different names. In the Dnieper Rapids region they are known as the Surskii culture (which was replaced around 5500 BC by the Dnieper-Donets culture descended from the north). In the Crimea, the Neolithic culture is known as the Thah-Air, north of the Sea of Azov as the Matveev Kurgan and Kamennaya Mogila, in the lower Don River Valley as the Rakushechnyi Yar, and in the lower Volga basin as the North Caspian or Dzhangar culture. Except for the Dnieper-Donets culture, which is known from a number of cemeteries with a collective burial practice, materials from these cultures are relatively sparse, consisting of microlithic flint or quartzite tools, bone tools, and potsherds, recovered mainly from thin habitation layers. For the most part, these cultures seem to have been descended from Mesolithic forebears in the same area; microlithic flint tools produced by the early Neolithic cultures are similar to flint industries of the preceding Mesolithic era. There seems to have been some cultural relation between the early Neolithic groups in these areas. The assemblages of Neolithic artifacts north of the Caucusus and north of the Caspian (*i.e.*, in the Volga Basin) shows general similarity to that of the Caucasus Mountains and Transcaucasia; flint industries from east of the Ural Mountains and the Caspian Sea are linked with Central Asia and the Near East. More information comes from the early part of the 5th millennium BC, when the domesticated horse appears in the Volga basin. At this time, the culture in this area rather rapidly takes a different course.

What emerged in the Volga Basin between 5000 and 4500 BC was a culture that would have an enormous influence on the course of European history. This is the Kurgan culture, the subject of the following text. During this period distinctive features emerged which would archaeologically characterize the Kurgan culture by the middle of the 5th millennium BC: the mobility of the people due to the mounting and riding of the horse, the role of the horse and oxen in religion, the rise of animal herds and pastoralism, and the rise of patriarchy and ranking. The culture of the early 5th millennium BC is known archaeologically as the "Eneolithic Samara culture," followed by the "Khvalynsk culture" (named so after the cemetery in the Saratov district) dated to before and around 4500 BC. During the Khvalynsk phase the transition from flat graves to pit-graves covered with stone cairns (barrows, earliest kurgans) took place and the collective burial practice was abandoned. Rich tombs of males, probably chiefs, begin to appear, in which the male was equipped with prestige weapons and insignia (lugged axes made of porphyry, carefully retouched flint daggers, bows and arrows, and horse-head shaped stone scepters). By this time, the social hierarchy and patriarchal order were already established. In economy, a trend towards a nomadic pastoralism with predominance of sheep took place.

Unlike European farmers, who stayed in the same location generation after generation, the pastoralists moved from pasture to pasture during the year. Probably, they functioned in small tribal units, settling in one area temporarily, then moving on with their herds of animals. The houses they built were not substantial, and the archaeological remains of their dwellings are sparse. They did, however, devote considerable effort to burying their dead and to funerary rites. Consequently, the most distinctive archaeological remains are their burials and the artifacts interred with the dead.

By 4500-4300 BC, these peoples had solidified into a culture with definite burial practices and artifacts, identifiable in the archaeological record over a wide area between the Middle Volga, the Ural Mountains, the Caucasus Mountains, and the Don and lower Dnieper River basins. Throughout their history, these peoples would be identified by their burial monuments, a pit dug in the ground in which the dead were deposited, covered with a round mound of stone or dirt, called in Russian a *kurgan*. Because this type of monument is the most distinctive feature of these people, their culture was named the "Kurgan culture" by the author in 1956. In Russian and other Slavic languages, the term "Pit-grave culture" (Yamna) continues to be used for this culture. ("Pit-grave," however, is too general a term for a definition of a culture, because pit-graves are known from various epochs of prehistory and are found all over the world, but the combination of a pit-grave and a round kurgan [barrow] on top of it is typical of the steppe belt of Eurasia). The term *Kurgan culture* is used as a blanket name for the mobile, pastoral, and warrioring tribes of the Ukrainian, South Russian, and Central Asian steppes during the period from *c*. 4500 to *c*. 2500 BC, a period when they expanded into Europe, Central Asia, Anatolia, and the Near East. The Kurgan culture is a phenomenon of the steppe and is linked with the mobility of the people which developed after the domestication of the horse. There are no kurgans before the middle of the 5th millennium BC.

What emerges from excavations of kurgans is a picture of a culture drastically different, economically and spiritually, from the peaceful agriculturalists of the Old Europeans. Unlike the Old Europeans, the Kurgan cultures of the steppes singled out an individual for special burial beneath the kurgan, implying a special status for the individual. One gender is usually present in the kurgans: males. This is in contrast to Old Europe, where both sexes were buried together, reflecting the sex-egalitarian nature of Old Europe. A further difference between the two cultures is in the types of grave goods buried with the dead. In Old Europe, these were largely symbolic, intended to speed the process of regeneration of life after death; in the Kurgan burials, the grave goods were mostly insignia of the man's rank during life and his weapons.

The emphasis on weapons buried with the male – arrows carried in a quiver, spears, and knives or daggers – shows the value of fighting prowess in the affairs of the Kurgan tribes. An individual male warrior likely acted as chief with complete authority over the band. In its emphasis on the power of a few warrior males, the Kurgan society was diametrically opposed to the peaceful and matrilineal cultures of Europe. The Kurgan peoples held women in low esteem. Many burials are of individual males, but in others the male is accompanied by other skeletons, usually a female, and sometimes young children. From the analogy with later historical practices, these were probably members of the man's family – the wife and children – who were sacrificed at the time of the man's death and buried with him, again a practice completely unknown in Europe of this time. The practice of burial of the widow with the deceased husband, known as *suttee,* is well known from historic times in India, and in other Indo-European cultures. Tombs alone clearly speak of a patriarchal order. As Herodotus related (in the 5th century BC), the Scythians (a tribe descended from Kurgan ancestors) considered and remembered their kurgans as sacrosanct tombs of "ancestral fathers" (not mothers). It is likely that the same attitude existed from the very beginning of the Kurgan culture.

The practice of *suttee*, and the types of remains found in the burials, particularly provisions of food and drink, tell us how these pastoralists viewed the afterlife. For them, the afterlife was a linear, one-way journey into the realm of the dead, where the soul would live for eternity, with no possibility of rebirth. The food, drink, tools, and weapons were intended to sustain the individual, who retained his worldly rank in the afterlife. Comparative Indo-European studies (in which the religion and mythology of several cultures of Indo-European descent are compared) show that in early Indo-European beliefs, the underworld was a fortress with ramparts and a boundary wall. These beliefs were in strong contrast with the beliefs of the Old Europeans, for whom death was inextricably interwoven with the cycle of life, death, and regeneration, in which all people were equal. Eventually, the Kurgan people would spread their influence far beyond their homeland in the Russian steppes. It would extend over most of central Europe and large stretches of Asia. In the world of prehistory, the rapidity with which Kurgan culture spread was unprecedented. What could have caused these warrior cultures to have spread over such wide areas? The answer lies in one of the most important players in the drama of human history: the horse.

The Horse

Evidence for the horse first appears in the early part of the 5th millennium BC at the S'ezzhee cemetery, on the banks of the Samara River in the Middle Volga region. Here, horse-shaped pendants were interred with the dead, and actual horse skulls and bones were found buried above the skeletons in hearths, probably the remnants of sacrificial ritual. As the Kurgan culture expanded across the steppes of south Russia and Kazakhstan, the horse sacrifice and other horse artifacts, such as a horse-headed scepter, became a common find in burials of the deceased male warrior, indicating a cultic role for the horse. At the few settlement sites excavated, the horse is amply represented. In the settlement of Repin on the banks of the Don River, dated to around 4500 BC, 80 percent of the bones found were horse bones, while at a site near Petropavlovsk in northern Kazakhstan, a great number of horse bones (over 100,000) were found, accounting for 90 percent of the bones found.

Farther west, in Europe, the domesticated horse did not exist during the Neolithic. (Only at the end of the 5th millennium was it introduced by the first horse-riding warriors from the Russian steppes.) It is true that a species of large horse lived in Europe earlier, during the Upper Palaeolithic. The horse was a favorite subject of Upper Palaeolithic artists, although of course neither it nor other large animals (except for the dog) was domesticated at this early time. But at the end of the Upper Palaeolithic, around 12,000 BC, with the melting of the glaciers, the climate changed drastically and the horse, along with several other large Upper Palaeolithic mammals, became extinct in Europe. Any evidence of the horse in Neolithic Europe is absent before 4500-4300 BC.

Although the horse became extinct in Europe, a smaller species of horse, *Equus ferus Boddaert,* survived in the wilds of the south Russian and Central Asian steppes. It existed as two subspecies, the *tarpan* and the *taki* (also known as the Przewalski horse). When humans domesticated the horse, it was the *tarpan* that they domesticated. Exactly when domestication occured is uncertain. By 5000 BC or perhaps earlier, domestication could have taken place, and clearly by 4500 BC, large scale herding of horses had occured. Just where this happened cannot be pinpointed, but the archaeological evidence suggests the Volga region north of the Caspian Sea, and the area between the middle Volga and the Urals, where the steppe and forest regions mix. At the present time, the earliest horse bones are known from this region, at the Ivanovo and S'ezzhee sites, (district of Samara) and at the Mullino and Davlikanovo sites (in the southern Ural Mountains).

The motivation for domesticating the horse is not certain, but it is unlikely that the pastoralists of the steppe regions originally domesticated this animal for the purpose of riding it. More likely it was kept, as other domesticated animals, as a source of food. Even to this day, peoples of the steppe keep horses as a source of both meat and milk. The semi-nomadic pastoralism of the prehistoric Kurgan horse-keepers may have an ethnic analogy with pastoralists who were recorded to have lived between the Caspian Sea and the Altai Mountains in Siberia. These people kept herds of horses, cattle, sheep, and goats, practicing little agriculture. In the earliest stages of its domestication, the function of the horse may have been purely economic. In addition to its use as a source of food, it was probably used also as a draft animal.

But the horse began to have its great impact on human society when the Kurgan peoples made another innovation: around 4500 BC they learned to ride the horse. At this time, bridle equipment (cheek pieces made from antler) appears at the site of Dereivka, on the lower Dnieper, and many other sites. One of the most important effects of learning to ride the horse is an explosion in communication. A horse can carry a human rider 20-30 miles in one day, at least 4-5 times the distance the average person can travel on foot in the same time. The domestication of the horse explains the existence of a widespread uniform culture in the early stages of the Kurgan culture's development. By 4500 BC, there appears a remarkably similar repertoire of tools, ornaments, and weapons between the Middle Volga basin, the Caucasus and Ural Mountains, and the Caspian Sea _ an area two thousand kilometers wide. Undoubtedly, the similarity in artifacts cannot be construed as meaning these people were one large, politically unified group; more likely, they lived as smaller tribes and clans, probably related by blood. But the similarity in artifacts attests to the vastly improved communication in this region, and close cultural ties.

As important as the horse was to increased communications, even more important was the impact of the horse on raiding and warfare. A well-equipped warrior on the ground is formidable enough, but on horseback he undoubtedly became a terrifying opponent. Many of the weapons found in Kurgan graves are those that could be carried on horseback: the spear, dagger, and particularly the bow and quiver with arrows. The horse allowed the warring way of life to be carried great distances. The warrior mounted on horseback could sweep out of the plains with no warning, attack, and then ride back into the steppes. The pattern we see in historical times, when groups like the Scythians, Sarmatians, the Huns, and later the Mongols, scourged the steppes, apparently started with the Kurgans in these prehistoric times. Although the Kurgan pastoralists were of a lower cultural level than cultures of the Middle East and Europe of the same time, their use of the horse would give them an impact on western civilization that would last until the present day. With the horse, these belligerent peoples would spread their way of life across large regions of Europe and Asia.

The Cult of the Horse and the Sky-God

In ancient times, it was common for animals that played important economic roles to be incorporated into religion. The animals important to the Kurgan culture became objects of veneration, and all of these – cattle, horse, as well as dog and sheep – are found to some extent in cemeteries and Kurgan burials. But of all these, the horse far outshines the others. As already mentioned, the horse had already achieved cult status during the period 5000-4500 BC, as shown by some of the earliest horse artifacts – horse-head sculptures, pendants in the shape of horses (found in graves), and horse skulls and bones offered in sacrifice. The ritual importance of the horse would continue through the next several thousand years of the Kurgan culture and its descendants.

If we now turn to comparative Indo-European mythology, we find the pantheon of Kurgan gods mirrored in the actual Kurgan social tradition: the pantheon was dominated by warrior gods, who lived in the sky and were metaphors of the shining sky and thunder. Like the warrior chiefs, the Kurgan gods rode on swift horses. Goddesses in the mythology of these peoples were merely the lovers and wives of the gods. They were not the parthenogenetic creatrixes of Old European religion who created new life, unassisted, from within their own bodies. In Kurgan religion, the feminine force is not a universal divine force. The Old European emphasis on the female body, her generative functions, and cyclical lunar symbolism, are absent in Kurgan religion. The fertility of the Indo-European goddesses, and even of the earth itself, must be stimulated by the Thunder-God.

One of the consequences of the semi-nomadic, pastoral existence, and mobility imparted by the horse, is a lack of connection to the earth. In this respect, the Kurgan cultures differed completely from the sedentary Old Europeans, who were rooted to one spot for generations and earned their subsistence from the soil. Substantial permanent Kurgan settlements and temples are not known. As the Kurgan cultures spread, they took their social structure, religion, and way of life with them to distant areas of Europe and Asia. When historical records began to be kept and legends written down, the myths of the warrior sky-gods and their horses were recorded in widely separate areas of the Indo-European speakers.

The Spread of Kurgan Culture: Wave #1

It was perhaps inevitable that the mobility of the Kurgan tribal groups would lead to their migration out of the Volga basin and into conflict with surrounding cultures, including the Old Europeans to the west. Another factor that encouraged this "push to the west" was climatic conditions: while east-central Europe was flourishing during the period of the climatic optimum of the 6th and 5th millennia BC, the steppe was drying out. The pastoralists were lured by the lush environment of the Danubian Europe and the northern Balkans. But the dry conditions of the steppes cannot alone explain the expansion. Two other factors – the domestication of the horse and the emergence of patriarchy – must be taken into account, because these are the primary factors required for the mobility. When the Kurgans expanded to the west and came into conflict with the Old Europeans, it was perhaps inevitable that the Kurgan people would win, overwhelming the Old European agriculturalists with their superior weaponry and with the mobility provided by the horse.

The first signs of the encroachment on Old European culture come from the sites north of the Black Sea, along the Dnieper River. This area was host to an Old European culture named after the rivers of the area – the Dnieper-Donets. The Dnieper-Donets people, a robust Crô-Magnon type, were agriculturalists, occupying permanent settlements, and producing pottery and figurines with the same religious symbolism as other cultures of Old Europe. Their burial was collective, in large pits frequently organized in long rows or trenches.

The coming of new people can be seen in sites such as Srednij Stog, in the lower Dnieper region, where the lower (older) layer contains the Dnieper-Donets materials, but where the upper layers are distinctly different, containing an assemblage of weapons: flint arrowheads, flint blades up to 20 centimeters long, projectile points, daggers or halberd blades (see Fig. 7, p. 207 and Fig. 10, p. 210 above). The richest male graves contained copper artifacts – spiral bracelets, beads, tubes, and foil appliqués (see Fig. 9, p. 209) – imported from the west (probably via the Cucuteni culture from the Ai-bunar copper mines in Bulgaria). A number of graves with elaborate grave offerings had surface markers, usually cairns of pebbles, as in the Khvalynsk burials of the Volga region. Their pots –

beakers with pointed bases – were tempered with crushed shells, a different technique than used by Old European potters (see Fig. 13, p. 212). The skeletal remains also show a clear distinction between the earlier inhabitants: the later peoples were dolichomesocranial, taller statured, and of more slender physical type than those of their Dnieper-Donets predecessors. If a local development from Dnieper-Donets to Srednij Stog had taken place (as favored by Telegin [1986] and Anthony [1986]), it will have to be explained by physical anthropologists why Srednij Stog people are so markedly different from the Dnieper-Donets. More likely, Srednij Stog typifies the interaction of Khvalynsk proto-Kurgan culture with the Old European Dnieper-Donets culture. In these areas, some of the indigenous peoples retreated to the north, while others stayed and lived under their new masters.

From the initial point of contact with Old European culture north of the Black Sea, the Kurgan peoples moved southwest along the corridor of land northwest of the Black Sea into the Danube Basin in present day Romania and Bulgaria, the home of the rich Varna and Karanovo-Gumelniţa cultures. From here they migrated up the Danube River valley, into lands of the Vinča and Tisza cultures in the central Balkans and further into central Europe. In each of the areas in which Kurgan tombs appear, the Old European settlements, many of them occupied for over a thousand years, are abandoned. Many tells of Bulgaria and Romania contain a thick sterile layer formed by abandonment which lasted for more than 500 years. Occupation was resumed only after the middle of' the 4th millennium BC.

Neither of these cultural groups was an organized political entity, in the modern sense – the Old Europeans were united by religious and artistic traditions, and far-flung trading routes, but were not unified under a central political entity. Likewise, the Kurgan pastoralists at this time lived in small bands, possibly related by blood, and their encroachment on Old Europe cannot be thought of as an organized, massive invasion of the type we know from historical times. But as history has shown, small groups of well-armed warriors can easily overcome a large group of poorly defended peoples and change the course of history.

Historians point out that Attila the Hun's rampage through eastern Europe in the 4th century AD was extremely destructive, and yet it left little archaeological evidence; his violent legacy is known mainly from historical records. We are fortunate in the case of prehistoric Europe that the Kurgan invaders left more substantial archaeological evidence of their expansion westward into Europe than did the Huns. Excavations at some Old European sites reveal burnt levels that speak of actual destruction and violent takeover by the newcomers. The earliest Kurgan conquerors of European farmers may have been already terrifying, aggressive, and irresistible. From early Indo-European texts in lands between Ireland and India we hear myths of warriors ("heroes") possessed of a martial frenzy compared to that of wild beasts such as wolves. The repetitious occurrence of such descriptions through time and space suggests that the martial frenzy began early, possibly with the Kurgan peoples who overran Old Europe.

A dramatic example of violent takeover comes from ongoing excavations at Junacite in the upper Thracian valley of southern Bulgaria (information provided by the excavator N. Merpert at a lecture at the VI° Congresso Internazionale di Tracologia, at Palma, Mallorca, held in 1992 [Merpert 1994]). This huge tell produced a well-defined stratigraphy with many habitation levels dating from the Eneolithic (5th millennium BC) and subsequent Early Bronze Age. In the lowest layers of the tell was an Old European settlement of no less than 4 meters thick (of the Krivodol-Salcuţa phases, kin to the Karanovo VI culture further north). The last level consisted of rectangular houses, aligned in streets and built close to each other. All of them were in ruins, having been crushed down and burnt. Inside the burnt houses lay evidence of an apparent massacre: skeletons of women, men, and children, most of them in unnatural positions – on the stomach, faces down, with raised hands. Some skulls were crushed. Pottery, figurines of bone and clay, gold ornaments, and tools lay preserved under the ruins. The attack must have been swift, for clearly there was no time for escape. After the devastation, the surface was smoothed out and then a new culture began.

As the Kurgans expanded westward into Europe, they left other types of evidence of their movements. One of the most important is the kurgan tomb, along with the male graves equipped with horse-head scepters, bows, arrows, points, and daggers. As the Kurgans infiltrated Europe, the horse remained the pre-eminent religious animal, being offered in sacrifice, with parts of it (particularly the head and forelegs) being placed in the burial with the Kurgan warrior. A complete horse skull, found cut from the neck, offered in sacrifice around 4300 BC, was excavated in 1986 from a grave at Tiszaföldvár in the Tiszapolgár cultural area of eastern Hungary and is the earliest concrete evidence of the horse in central Europe. (Information by S. Bökönyi 1989.)

The impact of the Kurgans on European culture appeared not only as artifacts they brought with them, but as disruptions of existing Old European traditions. The disruption of life in Old European towns is mentioned above, but the Kurgan presence also disrupted the art and religion of Old Europe as well. The highly symbolic and technically sophisticated pottery of the Karanovo, Vinča, Lengyel, and other Old European cultures quickly declined and in some areas vanished, to be replaced by the cruder pottery, tempered with crushed shells and decorated with solar patterns.

Consequently, when we survey the archaeological evidence from 4500 BC onwards, we see that there are several types of evidence that allow us to trace the movement of the Kurgans westward: the appearance of Kurgan tombs, the abandonment of Old European settlements, and the disruption of long-lasting traditions in pottery and architecture.

The transformation from Old European to kurganized cultures was not simply a process in which the indigenous inhabitants were wiped out and replaced by newcomers. In many areas the indigenous peoples remained, making up a majority of the population. Analogous to situations of later times, when a conquered people lived under the rule of a relatively small ruling class, the Old European craftspeople retained their skills after the Kurgan takeovers. In some areas bird-shaped vases in honor of the Bird Goddess continued to be produced. Undoubtedly, these peoples retained their beliefs and artistic traditions, but their artistic expression declined greatly. In religion and art, their beliefs and symbols became an undercurrent, or substratum, of a newly emerging set of symbols. Clearly, the Kurgan symbols of the sky, horse, and weaponry dominated, but the belief in the Goddess continued. The new cultures that emerged were an amalgam, with elements of the Old European tradition persisting within the dominating Kurgan traditions. With the appearance of the Kurgans, European society began to be transformed into a hierarchical, classed society, with the local farmers forming the lower class, and the warrior chiefs the ruling class, in a system resembling medieval feudalism.

Although the takeover of much of southeast and central Europe was complete, this first wave of Kurgan incursion left a few areas unaffected. Throughout the first half of the 4th millennium BC, there were still many pockets of Old European culture left. The continuity of Varna, Karanovo, Vinča, and Butmir cultures came to an end, but northern branches of the Lengyel and Tisza cultures in Germany, Poland, northeastern Hungary, and Slovakia survived for another 500 years. In Ukraine and Romania, the Cucuteni culture continued its cultural evolution; however, the Cucutenians did seem aware of danger, because they built their cities in more defensible locations. The Old European traditions remained strong in Greece and particularly the islands of the Aegean and adjoining parts of the Mediterranean, where the Minoan culture would flower more than two thousand years later.

The Second Kurgan Wave: The North Pontic Kurgans

The initial Kurgan incursions into Europe between 4500-4300 BC disrupted European culture as the Kurgan elements amalgamated with the indigenous Old European culture. After this period of flux, around 4000 BC, the archaeological record in Europe stabilized. Old European cultures, now kurganized to varying extents, continued their own evolution. This did not mean that the Kurgan influence on Europe had ended. The mobile tribes from the east would affect Europe for another 1500 years. In the middle of the 4th millennium BC, Kurgan cultures from the east again penetrated Europe, and significant changes appear in the European archaeological record. Kurgan cultural elements from north of the Black Sea can be detected in all of central and northwestern Europe.

During the 4th millennium, the area north of the Black Sea and the Caucasus Mountains – the North Pontic region – hosted a Kurgan culture that had undergone important changes since the end of the 5th millennium BC. First, the ability to organize large scale projects is attested to by tombs and forts, built on a larger scale than anything before. These monuments demonstrate the continuing classed, hierarchical social structure, and belligerence. Kurgan burials, which featured a single male warrior, reflect the continuation of the patriarchal warrior society. Hundreds of tumuli from this period are known from north of the Caucusus and the Black Sea. These tumuli carry on the burial tradition of the earlier time, but now they are often surrounded by orthostats (large upright stones), stelae, or rings of stone, and the mortuary chamber itself is frequently built of stone slabs. The skeletons of the male warriors within are often more lavishly equipped than their ancestors of the 5th millennium.

A fabulously rich tomb of a king, dates to the later part of this culture, was discovered at the end of the 19th century at Maikop, in the Kuban region, northwest of the Caucusus. The whole North Pontic culture from 3500-2800 BC is named the "Maikop culture" after this tomb. During this period, massive hilltop forts appeared. This type of monument now is much more ambitious than before, surrounded by massive walls of stone. Within these hilltop forts are found another architectural innovation: houses built with an apse (one end of the house is semi-circular rather than square); the apsidal part of the house was used for storage. These apsidal houses served both as residences for the ruling class, and as workshops for their craftsmen. Thus, the warrior rulers lived within a hilltop fort, accompanied by craftsmen producing weapons and other tools.

The uniformity of architecture in its hillforts, houses, and the massive scale of its burial mounds, globular black-burnished pottery, and weapon styles, all suggest a culture with a degree of unity unknown to the earlier Kurgan culture. It is entirely possible that at this stage, in the middle of the 4th millennium BC, the Kurgan peoples of this area were united politically, not just culturally. It is this more evolved Kurgan culture that would have the next impact on Europe.

One of the cultures that had survived the first wave of Kurgan expansion was the Cucuteni, located north and west of the North Pontic Kurgan culture. As an example of Old European culture that survived intact more than 800 years longer than its counterparts to the west, the Cucuteni culture demonstrates the course European prehistory might have taken had not Europe been invaded by the Kurgan cultures of the east. By 4000-3500 BC, the Cucutenians had created notable achievements in art and architecture, developing their own style of pottery decoration, building true cities with populations of five to ten thousand, and constructing two-storey temples. The first wave of Kurgan invasions had one observable effect on Cucuteni cities – many of them were moved to more defensible positions on hills and riverbanks – but otherwise the Cucuteni culture remained intact.

In the middle of the 4th millennium, the Cucuteni civilization disintegrated. The large cities were abandoned, and Kurgan burials now appeared, along with their small settlements of semi-subterranean houses located on hilltops. As had happened in central Europe after the first Kurgan wave, a new culture formed, containing elements of the Cucuteni culture but dominated by the Kurgan newcomers. The North Pontic invaders did not stop at the Cucuteni territory, but continued westward across western Ukraine, passed north of the Carpathian mountains into Poland and central Germany, and moved into the area of the TRB (Funnel-necked Beaker) culture. In addition to expanding to the northwest, the North Pontic peoples moved southwest as well. There, they encountered populations that had been partially kurganized by the first wave. Fortifications at sites such as the Cernavoda in eastern Romania demonstrate resistance to the Second Wave.

The new cultures that formed in the aftermath of this new expansion covered much of southeastern, central, and northern Europe, from Romania and Bulgaria on the east to Switzerland on the west, from Germany and Poland on the north to Greece on the south. Although known by various names in different areas (Baden in the Middle Danube basin; Ezero in Bulgaria; and Globular Amphora in Romania, western Ukraine, Poland, and Germany), all represent either a coexistence or an amalgam of two very different cultures (see Map 1, p. 270).

Many new sites were fortified. Following the tradition from the North Pontic region, European fortified settlements were built high on hilltops, in almost inaccessible locations. Like houses in the North Pontic region, hilltop fortified settlements in Europe often included an apsidal house. Both the fortification of hilltop sites and their location point to Kurgan preoccupation with warfare. The fortified hilltop site was the seat of the ruling chiefs and center of cultural activities like crafts; the rest of the populus lived in the surrounding countryside. In some areas of Europe, the hillfort is surrounded by the villages of farmers, probably descendants of the Old Europeans, who continued the agricultural way of life. In other areas, the surrounding population practiced a pastoral economy, with the farming way of life falling into disuse.

The Second Wave of Kurgans brought a number of important features that would become part of European life. The four-wheeled wagon and the plough drawn by a team of oxen are well attested between the northern Caucusus and central Europe, both by actual finds and by depictions in rock engravings (see Fig. 29, p. 167 and Fig. 22, p. 295). Other finds underscore the mythological dimension the Kurgans introduced to Europe. Stone stelae depicting Indo-European gods, frequently found in the North Pontic region, appear for the first time in central Europe, particularly in the Alpine region of northern Italy and Switzerland. Some of the stelae may portray the main Indo-European god, the "God of the Shining Sky", who, from Indo-European mythologies recorded in later times, is known to be associated with the dagger or sword and a wagon (see the stela from Lagundo, Fig. 29, p. 167). The style of tombs appearing at this time in Europe closely resembles those found farther to the east. Elite tombs contained mortuary houses covered with stone cupolas supported by stone walls, covered by earthen barrows. The engravings on tomb walls (found north of the Caucusus and in central Europe) depict warriors (or deities), bows, quivers filled with arrows, horses, and dogs. Some of the anthropomorphic stone stelae from north of the Black Sea represent a god (very likely a Thunder-god) armed with a bow, arrows, mace, and an axe. (see Fig. 23, p. 296). This type of burial in the 4th and early 3rd millennia BC is encountered over a wide area extending from the northern Caucasus in the east to the Adriatic Sea in the west.

One of the more intriguing cultures that appeared in the wake of the Wave #2 infiltrations was the "Globular Amphora culture," which formed in the plains north of the central European mountains. Before the change, this area was occupied by a culture identified archaeologically as the Funnel-necked Beaker, or TRB, after the name for their pottery. They were an Old European culture, the heirs of the Linearbandkeramik (LBK) and Lengyel cultures, and they had close contact with western Europe. Like the Old European cultures of western Europe, the TRB culture produced burial monuments with the same architecture and symbolism of megalithic monuments. The ancestors of the Globular Amphora culture infiltrated from the east and settled within the territories of the TRB; the two cultures coexisted for centuries, throughout the second half of the 4th and early 3rd millennia BC (as radiocarbon dates of TRB and Globular Amphora indicate). The new culture is named in archaeological literature after a type of pottery they used – Globular Amphora – (Fig. 13, p. 286 which has close parallels in the North Pontic region.

The Kurgan origin of the Globular Amphora culture is seen in several ways. Their settlements are small and very thin archaeologically. They lived in camps, in small huts, and practiced pastoralism and some agriculture. Although the settlement remains are sparse, they did leave burials with human and animal sacrifices. These follow the typical Kurgan pattern, with a male warrior being the central figure, often accompanied by sacrificed women, children and servants. As in the North Pontic region, graves were mortuary houses built most often of stone slabs (Fig. 12, p. 285).

The parallel existence of the TRB and the Globular Amphora populations shows that in this part of Europe the assimilation process took a long time; the local culture was not absorbed immediately. Only after three stages (or phases) of the Globular Amphora co-existence with the TRB, which lasted nearly a millennium, can a process of transformation of the TRB communities be observed (see Kośko 1991). The final symbiosis of the two different cultures is a fact of utmost importance for understanding the origin of later cultural groups and Indo-European languages, since in this symbiosis are the roots of the northern Indo-European family from which later the Celtic, Italic, Germanic, Baltic, and Slavic languages and cultures evolved.

The Globular Amphora culture is also remarkable for its expression of an important aspect of Kurgan religion: the worship of the sun and its color. In Kurgan religion and mythology, the sky was the dwelling place of its heroes and deities, and its primary god was the "God of the Shining Sky." The color of the sun – gold or yellow – had great symbolic importance. Solar patterns – circles, circles with radial lines like rays of the sun, and crosses – are the most common designs on pottery and bone and amber discs. For Indo-European cultures, gold would be the object of quests, indeed of obsession, during prehistory, during classical times (as attested by the legends of the Golden Fleece and the Argonauts), and certainly into modern times. For the Globular Amphora peoples, gold metal was not the most accessible material that captured the color of the sun. They found their material on the shores of the Baltic Sea. Here, the resins of ancient trees had fossilized to become amber and had washed ashore on the beaches. This semi-transparent, hard substance, in which twigs and insects were sometimes embedded, embodied the color of the sun and held a fascination for these kurganized people. They gathered and carved the amber into discs, cylindrical beads and other jewelry, the most impressive pieces of which were placed in graves with the chiefs. The search for the symbolically important amber was probably one motivating factor in the expansion of the Globular Amphora people north from Poland and Germany and into the lands of the present day Lithuania around the southern shores of Baltic Sea.

The Kurgan Second Wave infiltrations not only eliminated most of the islands of Old European culture that had survived the first wave, it extended the reach of Kurgan influence even farther into Europe, particularly to the North Sea and the Atlantic Coast. The Kurgan people apparently traveled up the Rhine River to the North Sea, reaching Ireland as early as *c.* 3500 BC. Although such far-reaching influence may seem swift, definite evidence of Kurgan influence is found at this time in Ireland in the form of a type of burial, known as the Linkardstown type burials, in which a single male is featured prominently in the Kurgan fashion (see Jones Bley 1989). This type of burial contrasts sharply with the previous Irish megalithic burials, which are communal.

Kurgan Wave #2 also brought with it a technological advance that had a tremendous impact on the course of European prehistory: bronze metallurgy. Both copper and gold had been used by the Old Europeans from about the mid 6th millennium, and copper had been mined from about this time as well. While both are easily worked, pure copper is too soft to withstand intense pressure or hold a sharp edge. Thus it is not useful for tools and weapons. Only when copper is alloyed with another metal (usually arsenic or tin) resulting in bronze, does it become hard enough for the purposes of tools and weapons. Iron the other important metal in ancient times did not appear in Europe until *c.* 1000 BC.

It was the North Pontic peoples who introduced bronze metallurgy into Europe. They in turn seemed to have learned the technology from the Transcaucasian cultures. When bronze was introduced to the areas north of the Black Sea, the Kurgan peoples used the new technology to create weapons which resembled of their earlier flint weapons, and they imported new styles of weapons from south of the Caucasus. When they began the Second Wave of infiltration into Europe, in the middle of the 4th millennium BC, they brought with them bronze metallurgy, as well as the new types of weapons. The Bronze Age of Europe had begun. However, only a few bronze weapons and tools were created, and the majority of tools and weapons continued to be made in the traditional media of bone, antler, stone, flint, and wood. Significantly, the working of bronze took place within the confines of the hillforts, where molds used to cast weapons have been found. The manufacture of bronze weapons and tools was highly valued by the rulers.

The Third Kurgan Wave

Further drastic changes in Europe were caused by a Third Wave of the Kurgan migrations, which began soon after 3000 BC. Like the previous peoples of the steppes, the Third Wave Kurgans left few dwelling sites due to their mobile, pastoral existence; instead, we know them mainly from their burial monuments, which in the Kurgan tradition are burials of single males as primary graves. They were buried in pits containing a mortuary house built of wooden posts and roofed with horizontal beams, over which low round earthen barrows were raised. The physical type of the newcomers to Romania, Bulgaria, Serbia, Croatia, and eastern Hungary are described as a Europid race with primitive features: tall statured and strongly built with dolichocephalic skulls, pronounced nose, and a robust mandible. This type corresponds exactly to that found in late Yamna kurgans north of the Black Sea and the Volga basin.

Judging from the appearance of this type of kurgan, the Wave #3 people spread from the Volga-Dnieper steppes, across the Pontic Region into east-central Europe: Romania, northern and central Bulgaria, northern Serbia to Bosnia in the west, northeast Hungary, and Slovakia. Hundreds of kurgans of the late Yamna type now appear in these regions, and based on the sheer number of burials, the Third Kurgan Wave infiltration seems to have been on a more massive scale than earlier waves, and it had a severe impact on the ethnic configuration of Europe. Not only single kurgans, but whole cemeteries of fifteen to twenty kurgans, arranged in rows or groups, emerged now in areas as distant from south Russia as Bulgaria. Usually kurgans are from 1 to 3 meters high, but the largest kurgan in these cemeteries is up to 5 or even 8 meters in height. Most of the burials had no grave goods, except an occasional silver spiral ring (in male graves). Interestingly, a four-wheeled wagon was found placed above a secondary grave which belonged to a 25 year-old woman in a kurgan at Plačido, district of Tolbukhin in northeast Bulgaria. The burials of women and children (as secondary graves in kurgans) suggest the presence of families.

Wave #3 triggered population shifts, as the east and central European cultures (already kurganized as a result of the first two waves) moved from their east-central European homes to new areas: into northern Europe, southern Scandinavia, the East Baltic area, and to central Russia. The Corded Pottery people – heir to the Globular Amphora culture – diffused north into the East Baltic area and southern Scandinavia. In the northwestern Balkans, the Vučedol culture – heir of the Baden culture – pushed south and west, eventually reaching the Peloponnese of modern-day Greece around 2900-2500 BC. Another culture that formed, somewhat later in the wake of Wave #3, was the Bell Beaker people, whose presence in western Europe between *c.* 2500-2000 BC is well-attested. The Bell Beaker culture very likely started in the kurganized territories of Serbia, and its push into western Europe completed the restless period of migrations of warrior folk before cultural stabilization and new formation of cultural groups, known in later times as separate Indo-European speakers.

By 2000 BC, the world of Old Europe had been transformed, except for Old European groups on Crete, on Aegean islands, and in Iberia.

The Indo-European Hypothesis and the Kurgan Culture

The study of the meeting and mixing of Kurgan with Old European culture is intimately intertwined with the study of linguistics. The languages spoken by these different cultures can help us unravel the stories of their origins. For most of prehistory, we do not have written records that tell us what languages were spoken by which people. While writing started in Mediterranean Europe around 1500 BC, and flourished after 800 BC, writing in northern Europe did not begin on a large scale until the Christian era.

The pattern of similarities between the Indo-European languages, as well as similarities in customs and religion of the cultures that spoke these languages, invited explanation that these languages sprung at an earlier time from some common source. The expression of this was the Indo-European Hypothesis. In this theory, all the modern Indo-European languages were descended, in the manner of a family tree, from a common ancestral language spoken at some time in prehistory. This mother tongue, termed Proto-Indo-European, was thought to have been spoken by peoples – called the Proto-Indo-Europeans – sharing a common culture. Most likely, for the language to form, it would first need to have been spoken by a group of people in a geographically restricted area, the "homeland" of the Indo-Europeans.

In addition to requiring a homeland and a people to speak the Proto-Indo-European language, the Indo-European hypothesis also requires a mechanism for the spread of the language. Although the original speakers probably lived in a confined region, at some time their language – probably as a result of population movement – expanded across a vast geographical area. The hypothesis requires a mechanism of expansion, and also must explain what it was about the languages and cultures of these Proto-Indo-European peoples that allowed them to be so successful in their expansion that they subordinated the language and cultures of the peoples they encountered.

In the hypothesis, as the descendants of the Indo-Europeans spread to new areas, the languages they spoke began to change, according to linguistic laws and under the influence of local languages with which they came into contact. Eventually, the original Proto-Indo-European was lost, and only its far-flung daughter languages remained. Linguists have used the Indo-European languages that survived into history to reconstruct the original, Proto-Indo-European language spoken in prehistory. Although the language itself is hypothetical, it is based on comparisons of common words and grammar found in widely separated areas. Here the theory is that if the same vocabulary and grammar are found in the daughter languages, then they must have inherited these linguistic traits from the mother language. Indeed, many Indo-European languages have closely-related words of kinship, animals (wolf, horse, steer, horse, goat, pig, dog), deities, weapons (blade, spear, sword, bow and arrow), vehicles, wheel, counting, and certain verbs.

The laws of linguistic change that describe how languages change over time also suggest a time-frame for the expansion of the Proto-Indo-European speaking people. This is based on the notion that the longer languages are spoken, the more they diverge from each other and the mother tongue, as can be seen to have happened over the past thousand years with languages such as English. Both the ancient and modern Indo-European languages had remarkable similarities to each other. Tocharian, an extinct language on the border of China, had peculiar linguistic traits in common with Slavic languages; while Lithuanian, a Baltic language, has striking similarities to ancient Sanskrit. Because these linguistic similarities exist, many scholars feel that the expansion of the Proto-Indo-European speaking peoples occurred relatively late in prehistory, not more than two or three millennia before recorded history began, that is, sometime after 5000 BC.

Since the Indo-European hypothesis was formulated in the 19th century, much scholarly debate has focused on two crucial issues: the location of the homeland, and the method by which these peoples and language spread. Delving into prehistory using linguistics necessarily involved coordination of linguistics with the physical evidence from prehistory, provided by archaeology. Furthermore, the coordination with comparative studies of Indo-European mythologies and archaeology is another requirement. Studies of the Indo-European mythologies recorded in lands between India, Rome, Ireland, and Scandinavia (mainly by French mythologist Georges Dumézil, 1898-1986, who was the first to indicate that mythology reflects an ideological structure) have shown that the Proto-Indo-Europeans had a specific form of religion and social structure. Comparative studies firmly suggest that Indo-European mythology and society was patriarchal and stratified, consisting of sovereign, warrior, and laboring classes. Thus, comparative mythology is another important source that sheds light on the Indo-European ideology, social and religious practices, and the location of the Indo-European "homeland." The sequence of events described earlier – the development of a distinctive Kurgan culture in South Russia and its subsequent expansion, starting around 4500 BC (aided by the horse) – meet the requirements we create for the Proto-Indo-European speakers. The Kurgan culture provides the link between the linguistic, mythological, and archaeological data.

Studies of relationships between linguistic families support the hypothesis that the Volga Basin and the area north of the Caucasus was likely the location of the early Indo-European speakers because the Proto-Indo-European language was influenced by languages which border this region: the Finno-Ugric, Altaic, Caucasian (Kartvelian), and Semitic languages. The rapidity of the spread of language and the success of its speakers in overcoming indigenous peoples in new areas can be explained by the mobility and martial ability of the Kurgan peoples. The pastoral lifestyle and the horse provide the means by which the Indo-Europeans spread over vast reaches of Asia and Europe during a few millennia. When meeting new cultures, their superior weaponry and horse-mounted warriors easily overcame local resistance.

In explaining the rapid spread of the Kurgan culture and the Indo-European languages, the essential element was the horse. While differences in language and culture may have existed among neighboring tribes, horse riding provided a method by which language and culture could have been homoginized relatively quickly across the steppe north of the Caucasus and the Black Sea. One thing is clear: before the Kurgan expansions, the language of the Kurgan speakers had to be more uniform than after the expansion when many daughter languages sprang up in Europe and Asia in the wake of the amalgamation processes with indigenous populations. However, the question of a homeland earlier than the 5th millennium BC is a more difficult problem to address. The Neolithic north of the Black and Caspian Seas consists of a number of regional groups and the archaeological materials are not sufficient for reconstructions of social or religious life.

The Indo-European hypothesis describing the expansion of Indo-European speaking kurganized people also finds confirmation in the linguistic map of early Europe and Anatolia. If indeed Indo-European cultures were expanding into new areas, we would expect them to be moving into areas where the indigenous peoples spoke non-Indo-European languages. This pattern is in fact confirmed in historical texts found in the Middle East and Europe. Many of the historical cultures that preserved Old European traditions also preserved a non-Indo-European language. Notable among the European cultures are the Minoan, Etruscan, Basque, Iberian, and Pictish.

In Anatolia, the first records of an Indo-European language appear around 1800 BC, written by the Hittites, who ruled central Anatolia until about 1200 BC. Record keeping in Greece began around 1500-1400 BC in the script known as Linear B, deciphered by Michael Ventris in the early 1950's. The language it preserves turns out to be an early, archaic form of the Greek language, an Indo-European language. Evidence suggests that the Linear B script was originally used to write a non-Indo-European language and was only later adapted to write Greek. The earlier, non-Indo-European language may be preserved in an earlier script from Crete, Linear A, but this script has not yet been deciphered.[1]

Although a linguist cannot hope to recreate the pre-existing language if it is preserved in only a few inscriptions, it is often possible to determine if the indigenous language was non-Indo-European. This can be done by examining place-names: the names of mountains, passes, rivers, and other geographical points. The linguistic theory is that newcomers to an area, speaking a new language, will adapt already existing geographical place-names, since obviously the newcomers have none of their own. Similarly, if the climatic zone is different, they will adapt the names for local plants and animals they are unfamiliar with. Although the actual meaning of the place-name may not be known, linguistic analysis can show if it is non-Indo-European. Across Europe, non-Indo-European place-names attest to the languages spoken before the arrival of kurganized cultures. In Greece, for instance, place-names containing the elements "nth" (Zakynthos) and "ss" (Knossos) preserve non-Indo-European words.

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[1] That is, although there have been various attempts to decipher Linear A, there is no one attempt which has been universally agreed upon. [Eds.]

In several other areas of ancient Europe, evidence from place-names and inscriptions show that the indigenous cultures spoke non-Indo-European languages. From Italy we have definite proof of a non-Indo-European language in the form of Etruscan, spoken north of Rome and corresponding roughly to present-day Tuscany. The Etruscan language is preserved in place-names and many inscriptions that defy interpretation.[2] An area encompassing northern Spain and southwestern France is home to speakers of the Basque language. Basque has not convincingly been shown to be related to any other language in Europe, or indeed anywhere else on Earth. Studies of place-names show that at one time, the Basque-speaking area was much larger. Due in part to their geographical isolation in the foothills of the Pyrenees, the Basques have been able to preserve their language and culture. A similar linguistic situation existed among the Picts of Scotland, who, due to their geographical isolation at the northern fringe of Europe, preserved Old European customs and language until quite late. Although the language itself is no longer spoken and extensive records do not remain, the Picts did leave records of marriage and kinship in their native tongue. The names preserved on these records show that the Pictish language was non-Indo-European. Importantly, many of the records left us by these non-Indo-European cultures show that in addition to speaking languages that were non-Indo-European, these cultures had social structures and religions that were traced to Old Europe (For instance, the Pictish system of kinship, practiced until 842 AD, was matrilineal, another custom preserved from Old Europe).

"Word excavations," in which words from different Indo-European languages are compared, are very much needed, because what is accepted as common Indo-European in vocabulary is in fact only regionally delimited and may have derived from the substratum. For instance, when the same name-word is known only to the southern Indo-European languages and not to the northern or eastern languages (*i.e.*, of the Indo-Iranian group), the certainty of Indo-European origin is questionable. A thorough review of the vocabulary is needed in the fields of domesticated plants and animals, architecture, ceramics, metallurgy, bee-keeping, and ritual terminology. This review would help eliminate Indo-European terms and promote the understanding of how much of modern and historical languages was in fact inherited from the Old European layer. This analysis can be accomplished by combining linguistics and archaeology.

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[2] Most inscriptions are short and we can read (or decipher) them, *e.g.* "this cup belongs to ....," but these brief inscriptions do not provide enough linguistic information to make interpretation possible. [Eds.]

A pioneering work in this field has been carried out by Elizabeth Barber (1989). Her analysis has shown a clear stratification of Greek words, particularly with regard to weaving terminology. For instance, when she examined weaving terms, she found that a few words were Indo-European in origin, but most were non-Indo-European. The Indo-European terms only account for what one would use in weaving on the smallest and most primitive of looms: the band loom. Words used for more advanced looms and weaving technology – "weave header," "loom-weights," "shed-bar," "heddles," "warp," and "weft" – were borrowed from the indigenous (pre-Indo-European) inhabitants of Greece. This clearly suggests that the Old Europeans possessed an advanced knowledge of weaving, a fact confirmed by archaeology; the Indo-European speakers were primitive in this respect. When they settled in Greece, the Indo-Europeans adopted weaving technology from the indigenous people. Such word excavations (also called *archaeolinguistics* or *linguistic palaeontology*) give new insights into the cultures of Europe before the Indo-Europeans.

That the Kurgan people were Indo-European speakers is now widely accepted by researchers working in the field of east and central European archaeology as well as Indo-European linguistics and mythology. An alternative hypothesis has been offered, which states that the Indo-European languages were brought to Europe by the earliest agriculturalists, who spread from Anatolia to Europe in the early 7th millennium BC (promoted by Renfrew in 1987). This theory would put the Indo-European language, religion, and social structure in Europe at the earliest phases of Old European culture, more than 2000 years before the first evidence of Kurgan culture in east and central Europe. But this theory goes against the grain of interdisciplinary Indo-European studies. The Indo-European ideology and social structure can in no way be viewed as an outgrowth of Old European matristic culture, religion, and matrilineal descent system. Rather, patriarchy, weaponry, and mobility were fully developed north of the Black and Caspian Seas by about 4500 BC, and were subsequently superimposed on the matristic cultures of Old Europe by the Kurgan culture.

One of the more remarkable developments during the last decades of the 20th century has been the use of genetic data to trace ancient population expansions. Multivariate statistical techniques have been used to produce genetic "landscapes" of earlier times. As of 1992, geneticists see two major population expansions into Europe during prehistory: one from Anatolia, identified with the diffusion of the earliest farmers, the other from South Russia to central Europe. The second one corresponds with the Kurgan migrations. In their earlier publications, Sokal, Cavalli-Sforza, and their collaborators saw only one diffusion during the early Neolithic, and promptly assumed it to be the spread of the Indo-European languages (because there was no correlation with interdisciplinary Indo-European Studies and archaeological data). Continued research has corrected this view (see Piazza *et al.* 1995).[3]

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[3] Prof. Gimbutas clearly had an advance copy of the article as it didn't appear in print until two years after her death. [Eds.]

The many European cultural groups known from archaeology to have existed during the 6th and 5th millennia BC may have spoken various languages; most likely these formed mosaics of languages belonging to the same linguistic family. The Indo-European languages were superimposed on the indigenous languages by the infiltrations of the Kurgan culture, which occurred in repeated waves between 4300 and 2800 BC. The two linguistic families together with two social structures, two religions and their symbolic systems started to influence each other or merge. In some areas of Europe, a coexistence of two separate cultural systems is traceable for nearly a millennium, particularly in northern Europe. The familiar European culture of the Bronze and Iron Ages and of later history is an Indo-Europeanized culture dominated by Indo-European language and social structure, except in some areas where Old European cultures persisted (Crete and the Aegean islands, western Anatolia, Etruria, Iberia, and Pictish Scotland). But even in areas dominated by Old European language and culture, the Old European traditions remained as a substratum. Of the different aspects of Old European culture that survived, it is the religious elements, myths, and symbols that endured longest.

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APPENDIX

The Vocabulary of Indo-European Culture

Martin E. Huld

In this appendix, I have listed each word or semantic unit mentioned by Marija Gimbutas in the articles contained in this volume and grouped them into broad semantic categories. I have also added additional words when they are pertinent to understanding her discussion of these problems. In reviewing over 100 reconstructed IE words, I have been struck once again by the breadth of Professor Marija Gimbutas' vision of European prehistory. For the most part, recent linguistic scholarship has only strengthened the empirical base of her conclusions.

The reconstructed forms, marked by a preceding asterisk, which I employ here, conform to the usual scholarly conventions of IE reconstruction. These have undergone several changes since the mid-century when Gimbutas first began the study of Indo-European and Baltic origins. In order to place these and the differing reconstructions which Gimbutas used throughout her career in context, it is necessary to give a technical overview of Indo-Europeanists' methods.

Since August Schleicher first attempted to reconstruct PIE in 1861, three different systems have been employed to represent the recovered lexemes of the lost ancestral language. Even today there are different preferences in matters such as how to represent the sounds that appear as the vowels [i] and [u][1] in some positions but as the consonants [y] and [w] in other places or in the number of dorsal phonemes (*k*- and *g*-like sounds made with the back of the tongue). Some scholars assume a binary contrast between plain dorsals (*k, *g, and *g^{h}) and dorsals made with rounded lips (*k^{w}, *g^{w}, and *g^{wh}) while others assume, as I do, a three-way contrast of fronted dorsals (*$\hat{k}$, *$\hat{g}$, and *$\hat{g}^{h}$), rounded dorsals (*k^{w}, *g^{w}, and *g^{wh}) and backed dorsals (*q, *g, and *g^{h}) and reserve the unmarked symbols (*k, *g, and *g^{h}) for cases where a decision cannot be made. Regardless of these matters, or the type of reconstruction, all scholars have adopted the convention of placing an asterisk (*) before reconstructed forms. I have added the practice of employing a dagger (†) for those 'reconstructions' which cannot legitimately be inferred for PIE, either bacause they are distributed in too narrow a field to be applied to the entire family or because they show signs of being loans.[2]

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[1] Written forms appear in *italics*. Spoken sounds are placed within square brackets. Generally, the International Phonetic Association (IPA) symbols are used; however, the palatal glide is represented here by [y] as in English rather than the IPA sanctioned [j] and the palatal stops are represented by an inverse breve over the corresponding velar, *e.g*. [k̑] and [g̑] as most Indo-Europeanists prefer, rather than the sanctioned [c] and [ɟ]; following Brugmann (1897-1916), I employ [ɡ] for a back-velar unlike the IPA, which reserves this symbol for a front-velar.

The **traditional reconstruction** was that codified by Karl Brugmann and his colleague Berthold Delbrück in the *Grundriß der vergleichende Grammatik der indogermansichen Sprachen*, an encyclopaedic work whose second edition first appeared between 1897 and 1916. Even in its own day, Brugmann's reconstruction had its critics, who objected to the analysis of the voiceless aspirates (*p^{h}, t^{h}, k^{wh}, and *q^{h}) as sounds found chiefly in Indo-Iranian — most often after initial [s] and at the ends of *seṭ* roots, the assumption of a three-way constrast of dorsals and Brugmann's creation of 'long' syllabic nasals (**n̥̄*) and liquids and (**l̥̄*).[3]

The **laryngealist interpretation**, based on the ideas of Fernand de Saussure, eliminates the major problems of the traditional reconstruction by assuming that just as the consonants [y, w, r, l, m,] and [n] can function as vowels [i, u, r̥, l̥, m̥,] and [n̥], so a series of 'laryngeal' consonants function as the vowel Brugmann wrote with a schwa (ə). 'Long' vowels are then interpreted as short vowels followed by one of these phonemes. Brugmann's voiceless aspirates could be clusters of voiceless stops [p, t, k^{w},] and [q] followed by one of these consonants. While many scholars were intrigued by the elegance of this system, it was not until the discovery of Hittite with written laryngeal phonemes in positions predicted by the laryngeal theory that widespread acceptance of Saussure's ideas was gained. By the 1950's abundant Hittite evidence permitted the first codification of these ideas in Winfred P. Lehmann's *Proto-Indo-European Phonology* (1952). Nevertheless, uncertainty on many basic points, most notably the nature and number of laryngeal phonemes, prevented the laryngealist interpretation from appearing in non-specialist works. The majority of laryngealists assume three 'laryngeal' phonemes, but a healthy minority note that a minimum of four, or perhaps as many as six, are required to explain all of the details. Not only the number but also the sounds of the laryngeals are matters of dispute. For the time being, most Indo-Europeanists are content to designate them by capital letters denoting their 'coloring' properties, *i.e.* **A*, **E* and *Ω with subscripts to denote varieties for those who believe in more than three.[4]

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[2] See Huld (1990:391-93) for a discussion of the criteria for evaluating native and loan words.

[3] Here and throughout I shall adhere to the Indo-Europeanist preference to represent 'syllabic' nasals and liquids as in English *button* [bətn̥] or *butter* [bətr̥] with a subscript circle; the IPA preference is for a small downward stroke, *i.e.* [bətn̩] and [bətr̩].

Even as the laryngealist interpretation was becoming the standard theory among Indo-Europeanists, unexplained problems were being noted. The chief of these was Roman Jakobson's observation (1958) that no spoken language was known to have voiced aspirates ([b^h, d^h, $\hat{g}^h$, g^{wh}], and [g^h]) without phonemic voiceless aspirates as the laryngealists now assumed was the case for PIE. The answer which the **Glottalic Reconstruction** provided to this problem was to assume that one of the series was in fact ejectives. By rewriting the voiced stops ([b, d, ĝ, g^w,] and [g]) as ejectives ([p̓, t̓, k̂', $\acute{k}^w$,] and [q̓]) as Gamkrelizde and Ivanov have suggested (1995), several problems have apparent solutions. Nevertheless, the glottalic reconstruction has not come into general use, and for this appendix I shall employ a modified form of the laryngealist reconstruction, accepting three series of dorsal consonants and adding a fourth vowel, **å* (Huld 1986:75)

The evidence derived from linguistic palaeontology indicates that IE society was based on a mixed economy of agriculture and stock-breeding. Many writers have mistakenly embraced the fallacy of the false dichotomy, believing that the Indo-Europeans must have been either strict agriculturalists or 'pure' pastoral nomads. In fact, in Murdock's "World Ethnographic Sample," a classic study of 565 societies (1957), 122 Old World societies were found to cultivate cereal grains while also keeping livestock for milking as we assume to have been the PIE situation. IE terms indicate a familiarity with basic agricultural techniques, but the number of terms for domesticated cereals is far smaller than those for domesticated livestock.

AGRICULTURE

1) 'plough' ***HarΩ-trom** [Lat. *arātrum*; OIr. *arathar*, W. *arddwr*; ON *arðr*, NE *ard*, OS *erida*, OHG *art*; Lith. *árklas*; OCS *ralo*; Gk. *ἄροτρον*; Arm. *araur*, Pali *āli*, TA *āre*] is widely attested both as a noun with a

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[4] See Huld (1986) for an attempt to define the phonetic properties of the laryngeals and a typologically coherent account of PIE phonology.

common instrumental suffix and as a verb stem ***HarΩ-** [Lat. *arāre*; OIr. *airim*; PG **arjan* (ON *erja*, OE *erian*, OHG *erran*, Go. *arjan*); Lith. *árti*, Lett. *aru*; OCS *orati*; Gk. *ἀρόω*], which demonstrates IE familiarity with basic agriculture.

2a) ‘sow’ ***seE$_1$-** [Lat. *serō* < _*se-sE$_1$-oA$_1$_; MW *he-af*; PG _*sǣjan-_ (ON *sá*, OE *sāwan*, OHG *sāen*, Go. *saian*); Lith. *sěti*; OCS *sěti*); Ht. *šai-* ‘sow, press down’; OIn. *ás(y)ati* ‘throw’ (perhaps reduplicated _*(s)e— sE$_1$-(i̯)eti_)]. It is often claimed that because the OIn. cognate means ‘throw (a spear, die)’, the development to ‘sow’ is a western innovation. In fact, it can be easily shown that it is the Indic development of the verb which is secondary, arising from slang. Indic vocabulary includes archaic words such as *sīta-* ‘seed plough’.

b) ‘domestic plant, herb’ ***se-sE$_1$-i̯o-s** [W. *haidd*; OIn. *sasyá-*; Av. *hahya-* ‘grain’] is an ancient reduplicated noun whose Indic reflex also preserves the original IE semantics of _*seE$_1$-_.

c) ‘seed’ ***seE$_1$-mn̥-** [Lat. *sēmen*; OHG *sāmo*; Lith. *sėmens* ‘flax seed’, OPrus. *semen* ‘seed’; OCS *sěmę*].

3) ‘reap’ **†sr̥p-** [Lat. *sarpěre*; Lett. *sirpe*; OCS *srŭpŭ*; Gk. *ἅρπη* ‘sickle’] also signals the existence of agriculture, though lacking a definitive eastern cognate.

Exactly which cereals were known to the Indo-Europeans is not always clear; though we can reconstruct a number of common words, the species to which they refer often differ among the various sub-branches. Climatic adaptation and local innovation may have resulted in a change of species without a change of terms as, for example, the North American use of ‘corn’ to mean *Zea mays* instead of *Triticum vulgare* as originally in England.

4) ‘grain, perhaps spelt or barley’ ***i̯eu̯-o-s** [Lith. *javaĩ* ‘grain’; Gk. *ζειαί* (< _*i̯eu̯-iA$_1$_) ‘spelt’; Ht. *ewa(n)-* ‘barley’; OIn. *yáva-* ‘barley’; Av. *yava-* ‘grain’, Farsi *ǰav* ‘barley’, Oss. *jæu* ‘millet’] was one of the most important and may have become a generic designation for ‘grain’.

5) ‘barley’, based on the root _*ĝhers-_ ‘bristle’, is reconstructed as an archaic neuter, ***g^{h}r̥s-d**, [Lat. *hord-eum*, OS, OHG *gersta*, Alb. *drithë*, and perhaps OCS *grosdŭ* ‘grape’ < _*ĝ^{h}rosdo-s_][5]. Gk. *κριθή* ‘barley’, often cited in this context, differs in both vocalism and consonantism; Grassmann’s Law would not apply to the athematic variant *κρῖ* and indicates an non-IE pattern of consonants.

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[5] The Slavic semantics may have been motivated by analogy of the grain head with the cluster of grapes. The accent and vocalism as well as semantics of Lith. *gìrsa* ‘brome grass’ and R. *gorokh* ‘pea’ point to a different etymon, PIE _*g^{h}r̥Hs-o-_; Gk. *κέγχρος* ‘millet’ < _*κέρχρος_ <

6) 'ripened (grain)' ***gr̥A$_1$-nom** [Lat. *grānum*; OIr. *grán*, W. *grawn*; ON *korn*, OE *corn*, OFrs., OS, OHG *korn*, Go. *kaurn*; Lith. *žìrnis* 'pea', OPrus. *syrne* 'fruit kernel'; OCS *zrŭno*; Pashto *zāṇ*], which was formerly regarded as existing only in the west until the Pashto cognate was noted, is derived from the neuter adjective modifying the preceding word.

7) 'barley' ***b^{h}ar-s-** [Lat. *far*, Osc. *far*; OIr. *bairgen*; PG **bariza-* (ON *barr*, OE *bere*, OFrs. *bere*, Go. *bariz-eins*; OCS *brašĭno* and *bŭrŭ*; Alb. *bar* 'grass'; Gk. *φῆρος· ἢ τῶν ἀρχαιῶν θεῶν τροφή*] is yet another neuter designation for 'barley' also based on a root 'bristle'.

8) 'some sort of seeded grass' ***puHro-s** [Lith. *pūraĩ* 'winterwheat', Lett. *pûŗi* 'wheat', OPrus. *pure* 'brome grass'; OCS *pyro* 'spelt', Cz. *pýr* 'quitch, couchgrass'; Gk. *πυρός* 'edible grain';[6] OIn. *pūra-* 'unleavened cake']. If the Indic cognate is rightly assigned to this set, we have another IE type of grain; others take OIn. *pūra-* to be from the root **pl̥E-* 'fill'. OE *fyrs* 'furze', often cited with these words, is unconnected, having the wrong vocalism and an unexplained [s]. ***puHro-s** is possibly a culture word, *cf*. Georgian *puri* 'bread', though the direction of the borrowing is unclear.

9) 'vetch' ***k̂i/e-k̂r-o-s** [Lat. *cicer*; Lith. *kekẽ* 'grape' < **k̂e-k̂ēr*, OPrus. *keckers* 'grape'; Alb. *thekër*; Gk. *κίκερροι* 'pale'; Arm. *siseṙn*] is another semantically problematic word that may reflect an IE form. Pokorny (1959:598), who rejected an IE origin for this set of words, nevertheless related Gk. *κριός* 'vetch' (allegedly dissimilated from **κικριός*) to the same root, but Frisk (1954:ii.22) rejected this hypothesis. From an IE standpoint, the semantic development in Baltic is problematic, although the wide separation between Armenian and Latin point to a possible ancient IE reduplicated formation; nevertheless, the identity of the root remains obscure.

Phonological problems abound in many words for basic Old European domestic plants. Several words for domestic plants lack clear IE reconstructions and are distributed in Central Europe, suggesting that they are loans from one or more lost Old European languages or North Balkan Substrate (NBS). A fuller discussion of this problem is found in Huld (1990) and (1996).

10) 'rye' NBS **†rug^{h}i̯o-s** [ON *rugr*, OE *ryʒe*, OHG *rocko*; Lith. *rugiai*, Lett. *rudzi*; OCS *rŭžĭ*] is confined to Germanic, Baltic, and Slavic and

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PIE **g^{h}er-g^{h}rH-o-* may be akin.

[6] Greek *πυρός* is often glossed 'wheat' but Homer uses it for animal fodder. The contrast expressed by *πυροί τε ζειαί τε* (*Od*. 4.604) perhaps indicates the contrast between human fare

regarded as a loan. A connection with Thracian _βρίζα_ 'rye' is questionable, because of the difficulty of deriving [i] from short [u] and explaining the significance of the Greek _β_-. A semi-vowel [w] is ruled out by the lack of a corresponding _wr_- in English, where such clusters are preserved until the 17th century.

11) 'oats' NBS †**Hau̯iĝ/k̑**- [Lat. _avēna_; Lith. _avižos_, Lett. _auzas_; OCS _ovĭsŭ_; Gk. _αἰγί-λωψ_ < _*ἀϝιγί-λωψ_] show both the distribution and phonological structure of the Old European substratum.

12) 'bean' NBS †**b^{h}ab^h**- [Lat. _faba_, Fal. _haba_; OPrus. _babo_; OR _bobŭ_] reflects an un-Indo-European reduplication in the root; PG _*baunō_ (ON _baun_, OE _bēan_, OFrs. _bāne_, OS, OHG _bōna_) may result from assimilation of earlier suffixed _*baƀnō_, but Alb. _bathë_ and Gk. _φακός_ show an entirely different final consonant.

13) 'flax, linen' NBS †**līnom** [Lat. _līnum_; OIr. _lín_ 'net'; ON _lín_, OE, OS OHG _līn_; Lith. _lìnas_; OCS _lĭnŭ_; Gk. _λίνον_] has a largely central European distribution and unexplained variation in vowel length, which indicate a pre-IE loanword.

14) 'pea' [Lat. _ervum_; OHG _araweiʒ_; Gk. _ἐρέβινθος_, _ὄροβος_] also show such variations in the vowels; additionally, the suffix in the first Greek word, _ἐρέβινθος_, has long been regarded as a sign of Aegean vocabulary.

15) 'hemp' †**kannabis** [PG _*χanapiz_ (ON _hampr_, OE _hænep_; OS _hanap_; OHG _hanaf_); Lith. _kanãpė_, OPrus. _knapios_; OCS _konoplja_; Alb. _kërëp_, Gheg _kânëp_ < _*kanap_-; Gk. _κάνναβις_]; _cf_. Huld (1990:406-407, 414).

16) 'poppy' †**mākon**- [PG _*mǣχan_- and _*maʒan_- (OS _māho_, OHG _māhen_, _mago_); OCS _makŭ_; Gk. _μήκων_, Dor. _μάκων_] is likewise limited to a Central European-Balkan distribution; the Slavic and Greek forms point to long _ā_ while Germanic shows both long _*ē_ and short _*a_ or schwa (_*ə_), another sign of a foreign loan-word.

17) 'millet' [Lat. _milium_, Lith. _málnos_, Gk. _μελίνη_], as Gimbutas observed, may be derived from the root 18) 'grind' PIE ***mel**- [Lat. _molĕre_; OIr. _melim_, W. _malu_, Br. _malaf_; PG _*malan_ (ON _mala_, OHG _malan_, Go. _malan_) and _*muljan_ (ON _mylia_, OHG _muljan_); Lith. _malti_; OCS _meljǫ_; Alb. _miell_; Gk. _μύλλω_ < _*molnoA_$_1$ and _ἀλέω_ < _*(m)ḷei̯oA_$_1$; Arm. _małam_ < _*mḷnomA_$_1$_ei_ and _ałam_ < _*(m)ḷnomA_$_1$_ei_; OIn. _mṛṇāti_, Bengali _āṭā_ 'meal' < _*arta_-; Av. _aša_- 'ground' < _*arta_-;[7] TA _mal_-]

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and fodder grains.

[7] The Greek, Armenian, and Indo-Iranian verbs and their derivatives, Greek 'flour' _ἄλευρον_ and Armenian 'mill' _ałauri_ all show the loss of initial _*m_, perhaps because of sandhi before thematic accusative objects.

or the root 'black' ***mel-** (*cf.* Gk. μέλας, μέλαινα) to distinguish the darker millet meal from wheat or barley flour. Whatever the etymology, the root 'grind' clearly indicates the processing of grains.

TREE NAMES

Tree names provide far less evidence of IE culture than is often believed. Only one species, the apple, was commonly domesticated, and then rather late. For this reason, many scholars cited by Gimbutas assume that words for apple were late loans.

19) 'apple' NBS **†åbölo** [OIr. *ubull*, W. *afall-en*; ON *epli*, OE *æppel*, OFrs. *appel*, OS *appul*, OHG *apful*, CGo. *apel*; Lith. *óbuolys*, Lett. *âbuolis*, OPrus. *woble*; OCS *jablŭko* is certainly a loan word confined to Meillet's 'Northwestern' languages (Huld 1990:398-400, 412).

20) 'apple' ***meA$_1$lo-m** [Lat. *mālum*; Alb. *mollë*; Gk. *μῆλον*; Ht. *maḫlan* 'fruit'; Wakhi *maṇa*; TA *malañ* 'nose'], however is not, as is sometimes claimed, confined to the eastern Mediterranean. Not only does the word not exhibit a typically Mediterranean polysyllabic shape, but cognates have now been found in both Iranian and Tocharian, where the shift on meaning to 'nose' is through the common comparison of apples to cheeks (Huld 1990:400-401; 1996:117-118).

The names of tree species may be known through trade artifacts fashioned of the wood, and similar economic exploitation may produce a folk-taxonomy far different from current West European botanical taxonomies; hence, tree-names show semantic variation that makes accurate reconstruction of the arboreal world of the Indo-Europeans difficult. Moreover, in distinguishing between the tree and the wood, the Indo-Europeans often resorted to derivational suffixes that can momentarily obscure cognates. Among the more securely attested tree names, the following are utilized by Gimbutas:

21) '(oak) tree' ***doru** [OIr. *daur*, Cor. *dar*, W. *derwen*; Gk. δρῦς; OIn. *dāru* 'tree], which Paul Friedrich thought was, for the Indo-Europeans, the default tree (1970:146).

22) 'acorn' ***g^{w}l̥A-** [Lat. *gla-n(di)s*; Lith. *gìlė*; OCS *želądĭ*; Gk. *βάλανος*; Arm. *kałin*; OIn. *gula-*] likewise indicates the presence of oaks, of which at least two species were distinguished.

23a) 'large oak' ***perk^w-s** [Lat. *quercus*; Gl. ἔρκος; PG **furχ-* and **ferχ-* (ON *fura*, OE *furh*, OHG *forah*, Lomb. *fereh*, NHG *Ferch*); Alb. *sh-par-r* 'broad-leaf oak' < **S-pork^w-no-*] is frequently associated with the Thunder-God, *cf.* ON *Fjǫrgynn* 'the father of Thórr' and Lith. *Perkūnas* 'thunder and oak god' < **perk^w-ūnos*.

b) 'small oak' ***Haiĝ-** [Lat. *aesculus* 'a kind of oak' < **Haig-s-tlo-*; PG

**aik-z* (ON *eik*, OE *āc*, OHG *eihh*; Gk. *αἴγ-ιλωψ* 'Turkish oak' *κράταιγος* 'white thorn tree'].

24) 'birch' ***b^{h}(e)rHĝ-** [Lat. *fraxīnus*; OE *beorc*; Lith. *bèržas*; OIn. *bhūrja-*; Oss. *bærz*] is attested in widely separated stocks, assuring its IE status.

25) 'fir' ***d^{h}on-u-** [NHG *Tanne* 'oak or fir'; Ht. *tānau*; OIn. *dhanu-* 'bow'] is equally well attested.

25) 'elder'/'alder' ***A$_2$els-no-** [Lat. *alnus*; Lith. *al̃ksnis*, Lett. *èlksnis*; Alb. *halë* 'black pine'; Ht. $^{\text{GIŠ}}$*alanza(n)-*]; competing with this word is an apparently Old European term 26) NBS **†aliso-** [Sp. *aliso*, Fr. *alise* (< Gl. **alisos*); ON *ǫlr*, *elrir*, OE *alor*, *elor*, OFrs, *elren*, OHG *erila*, *elira*; OCS *olĭxŭ*; Macedonian ἄλιζα], identified by its open sonorities as a foreign loan (Huld 1990:402).

27) 'elm' ***u̯i(n)ĝo-s** [OE *wice*, NE *wych(-hazel)*; Alb. *vidh*; Lith. *vinkšna*, Lett. *viksna*; R. *vjaz*; Kurd. *vīz*, Oss. *wis-qæd* 'maple'] is distributed from Germany to India and thus also assured of IE status.

28) 'ash' ***Ω$_1$es-eno/qo-** [Lat. *ornus*; OIr. *huinnius*, MW *onn-en*; R. *jásen'* (all < **Ω$_1$es-(e)no-*; PG **askaz* (ON *askr*, OE *æsc*); Alb. *ah* 'beech'; Gk. ὄξυα; Arm. *hac̣i* all < **Ω$_1$es-qo-*]; Lith. *úosis* may represent the oldest athematic form, **Ω$_1$ŏs*.

29) 'aspen/poplar' ***Hops-** [PG **aspō* (ON *ǫsp*, OE *æsp*, OHG *aspa*; Lith. *ãpušė*, Lett. *apse*, OPrus. *abse*; R. *osi-na*; Arm. *oṗi*; PIrn. **apsa-ka-* > Turkish *apsak*].[8]

30) 'willow' ***u̯oiH-ti-** [Lat. *vītis*; PG **wīþi-z* (ON *víðr*, OE *wīþi-ȝ*); Lith. *vytìs*; R. *vetlá*; Gk. *ϝιτέα*; Arm. *gi* 'juniper'; OIn. *veta-sá-*; Av. *vaẽitiš*, Farsi *bîd*] stands beside 31) NBS **†salək-** [Lat. *salix*; OIr. *sail*, W. *helyg-en*; ON *selja*, OE *sealh*, OHG *salaha*]. OE *wilȝe* and Gk. *ϝελίκη* are apparently conflations of these competing IE and pre-IE forms (Huld 1990:402-403).

32) 'beech' ***b^{h}u̯eAĝ-o-s** [Lat. *fāgus*; OE *bōc*, ME *beech*; Alb. *bungë* 'chestnut oak' < **b^{h}u̯eAĝ-no-*; SC *bāz* 'elder'; Gk. *φηγός* 'esculent oak'] has gained notoriety as delimiting one boundary of the IE homeland, but the meaning 'beech' is peculiar to western languages, and local replacement by more common members of the Fagaceae cannot be invoked for Albanian *bungë* 'oak' where the beech (Alb. *ah-u*) is in fact the most abundant deciduous tree, as is also the case in northern Thessaly (Huld 1981:306). The most we can say is that PIE **b^{h}u̯eAĝ-o-s* designated some tree, probably a member of the Fagaceae,

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[8] Friedrich (1970:49-50) notes, but rejects, the view that Gk. ἀσπίς 'shield' and ἄσπρις 'cerris oak' are related.

which produced edible fruit. Moreover, as Friedrich noted (1970:112), while the European beech, _Fagus silvatica_, became severely restricted in its east European distribution, the eastern beech, _F. orientalis_, extended to the Cossack steppe.

In addition to the trees specifically noted by Gimbutas, three others offer some evidence about the ecology and world of the Indo-Europeans.

33) 'berry-bearing flat-needled conifer, yew' __*Eei-u̯o-__ [Lat. _īuum_ 'taxus' OIr. _éo_, W. _yw-en_, OE _īw_, ON _ýr_, NHG _Eibe_; Cz. _jiva_, SC _iva_ 'willow', Alb. _enjë_; Ht. _eyan_ 'evergreen'] was commonly employed in the making of bows, as the frequent replacement of this word by PIE _*tåqsom_ 'bow' shows,[9] especially in PS _*tīsŭ_ in which the vowel derives from 'yew'. The tree had an important legal and ritual status in both Hittite and Celtic customs (Friedrich 1970:123-124).

34) 'spruce' __*peuk̂e-__ [MIr. _ochtach_; OHG _fiuchte_; Lith. _pušìs_, Gk. _πεύκη_; Kati _pucí_, Prasun _wyoc_] is widely distributed, and thus ascribable to the proto-language. Spruce indicates familiarity with a fairly cool climate.

35) 'long-needled conifer, pine' __*piHt-u-__ [Lat. _pīnus_ < _*pīt-s-no-s_; Alb. _pishë_ < _*pīt-so-s_; Gk. _πίτυς_; OIn. _pītu-dāru_ 'deodar'; Pamir _pit_ 'spruce'] is also attested at the geographical extremes of the IE world.

ANIMAL NAMES

The names of animals are similarly subject to geographic vagaries, but Gimbutas did note some important evidence. Unlike many of the myths and much of the symbolism of Old Europe, snakes and anurans have little role in IE vocabulary.

36) 'snake' __*Hṇg__^{wh}__-i-__ [Lat. _anguis_, MIr. _esc-ung_ 'water serpent'; OHG _ung_; Lith. _angìs_, Lett. _ùodze_, OPrus. _angis_; Pol. _wąż_, R. _už_; Gk. _ὄφις_ (with Mycenaean vocalism); Arm. _auj_; Ht. _elliy-anku-_; OIn. _áhi-_; Av. _aži-_] is frequently met in the role of enemy of a culture hero. Heracles, Indra, Kərəsaspa, and Thórr all battle serpents, and Puhvel (1987:202) has noted that ophimachy is characteristic of IE thunder gods.

This term for 'snake' is frequently confused with that for 'hedgehog' __*Eeĝ__^{h}__i-__ [PG _*iʒlaz_ (ON _igull_, OE _iʒel_, OS, OHG _igil_); Lith. _ežỹs_, Lett. _ezis_; SC _ježĭ_; Gk. _ἐχῖνος_ (_cf._ _ἔχις_ 'snake'); Arm. _ozni_, Phr. _ἔζις_; Oss. _wyzyn_]. Unlike the Old Europeans who venerated the hedgehog (Gimbutas 1991:244-45), the Indo-Europeans apparently did not hold this insectivore in high regard.

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[9] The vowel _*å_ symbolizes a rare low back vowel whose Latin reflex is [a] but [o] in Greek and Celtic.

37) 'viper' ***(s)nog-o(n)-** [PG **snaka-* (ON *snákr*, OE *snaca*); OIn. *naga-* 'serpent'] is from a root *snag-* 'crawl' *cf.* Plattdeutsch *schnaacken*, OIr. *snaighim*.

38) 'frogs' and 'toads' ***g^{w}ou+d^{h}eE-** [Lat. *bufō*, OIn. *godhā*] are also generally presented in a negative light. The name is a compound and may mean something like 'cow sucker'; Attic Gk. *βάτραχος* and its many variants may point after metathesis and assimilation — processes that themselves indicate possible tabuistic associations — to a similar compound.

Mammals are much better attested.

39) 'wild animal' ***ĝ^{h}u̯ēr-** [Lat. *fēr(-ox)* 'beast-eyed'; Lith. *žvėrìs*; R. *zverĭ*; Gk. *θῆρ*; TA *śaru*, TB *śerwe* both 'hunter' < **ĝ^{h}ēr-u̯o-s*], which Gimbutas mentions, implies the existence of animal domestication in IE culture, and she has noted many species revealed by archaeological investigations:

40) 'aurochs' ***Hus-ró-** [PG *ūraz* (ON *úrr*, OE *ūr*, OHG *ūr-ohso*, SGo. *uraz*); OIn. *usrá-* 'ox'], *Bos primigenus*, the fiercest wild animal of ancient Europe, is attested at the extreme ends of the IE world and contrasts with the domesticated species *Bos taurus*, which are also given names.

41) 'elk' †**Halk-** [Lat. *alcēs*; ON *elgr* < PG *alʒí-*; OPol. *łoś*, R. *los'* < PS **olsĭ*; Gk. *ἄλκη*] is confined to the north. OE *eolh*, *eola* and OHG *elaho* < PG **elχa(n)-* belong here, but the e-grade may owe something to the etyma for 'red deer'.

42) 'red deer' ***Eel-n-** [W. *elain*; Lith. *élnis*, Lett. *alnis*; OCS *jelenĭ*, *lani* 'hind' < **Eol-n-iA$_2$*;[10] Gk. *ἔλαφος* 'stag', *ἐλλός* 'fawn' < **Eel-n-o-*; Arm. *eɫn*; TA *yäl*, TB *yal* 'gazelle'] show cognates in both the east and west.

43) 'roe deer' ***i̯ork-** [W. *iwrch*, Cor. *yorch*, Br. *iourc'h*; Gk. *ζόρξ* 'gazelle'] is perhaps attributable to IE based on two widely separated branches.

Carnivores naturally attracted the attention of early Indo-Europeans, who distinguished five such animals. Gimbutas specifically mentioned three of them.

44) 'bear' ***Hr̥tk̑o-s** [OIr. *art*, W. *arth*; Lat. *ursus*; OAlb. *ar*, Alb. *arí*; Gk. *ἄρκτος*; Arm. *arǰ*, Ht. *ḫartaggaš*; OIn. *ṛkṣa-*; YAv. *arəšō*, Oss. *ars*, OPers. *arša-*, Farsi *xirs*], which is the largest Old World carnivore.

45) 'wolf, she-wolf' ***u̯l̥k^{w}o-s/luk^{w}o-s** & ***u̯l̥k^{w}-íA$_2$** [Lat. *lupus*; PG **wúlfaz* & **wulgíz* (ON *ulfr*, *ylgr*, OE *wulf*, OFrs., OS, OHG *wolf* Go. *ulfs*);

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[10] The Slavic vocalism of the feminine may show converse influence from the 'elk' etymon.

Lith. *vil̃kas*, Lett. *vilks*; OCS *vlŭkŭ*, R. *volk*; Alb. *ujk*; Gk. λύκος; Arm. *gail*; OIn. *vṛka-* and *vṛkī́*; Av. *vəhrkō*; TB *walkwe*].

The frequent change of basic phonetic shape and the common employment of 'wolf' in the creation of male given names such as Gk. Λυκοῦργος and 'Αρηΐλυκος, OE *Wulfstān* and *Cynewulf* may be indicative of the awe in which the wolf, the most common predator of flocks, was held.

46) 'fox' ***u̯lop-** [Lat. *vulpēs*; Br. *louarn*; Lith. *vilpišys* or *lãpė*, Lett. *lapsa*; Gk. ἀλώπηξ; Ht. *ulip(pa)na-*; OIn. *lopāśá-* 'jackal'; Av. *raopi*] was a trickster hero in European folklore, a fact which may be reflected by the metathesized reflexes.

47) 'lion' **†sing^{h}o-s** [Arm. *inj* 'leopard', OIn. *siṁha* 'lion'] is a loan from the Far East (*cf.* Old Chinese **śriŋ*) or a Mediterranean word **†leu̯ōn** [Lat. *lēo*, Alb. *luan*; Gk. λέϝων, λέϝαινα 'lioness'] (*cf.* Egy. *ʾrw*). As Gimbutas noted, the lion was outside the Indo-Europeans' direct experience.

Although not mentioned by her, two smaller carnivores provide interesting details about the habitat.

48) 'lynx' ***lu(n)k̑s-** [PG **luχsu-* (Swed. *lō*, OE *lox*, OS, lohs, OHG *luhs*; Lith. *lū́šis*, Žem. *lų̃nšis*; OCS *rysĭ* (< Iranian); Gk. λύγξ; Arm. *lous-an-ounk̇*], is indicative of a European locale.

49) 'otter' ***ud-ro-s** [PG **utraz* (ON *otr*, OE *otor*, OHG *ottar*); Lith. *ū́dra(s)*, Lett. *ūdris*, OPrus. *udro*; OCS *vydra*; Gk. ὕδρος 'small aquatic animal, water snake', ὕδρα 'a mythical water serpent' OIn. *udrá-* 'otter or crab'; Av. *udrō*] whose propensity for water has given its name, figures in many myths.

Professor Gimbutas did note the presence of four small herbivores:

50) 'beaver' ***b^{h}e-b^{h}r-o-s/iA$_2$** [Lat. *fiber*; OIr. *beabhar*; PG **biƀuraz* [Old Danish *biæuær*, OE *beofer*, OS *biƀar*, OHG *bibar*); Lith. *bẽbras*, *bẽbrus*, Lett. *bebrs*, OPrus. *bebrus*; OCS *bĭbrŭ*, *bebrŭ*; Av. *bawrō*, *bawrī*] and perhaps also OIn. *babhru-* 'large type of mongoose'] was probably called 'the carrier' < **b^{h}er-*. The distribution from Italy to Iran and the presence of the Avestan archaic ī-feminine assures IE antiquity.

51) 'hare' ***k̑aso-s/iA$_2$** [W. *cein-ach* < **k̑as-niA$_2$-*; PG **χazṓ* and *χásō-* (ON *heri*, OE *hara*; OHG *hasō*); OPrus. *sasins*; OIn. *śaśa-*; Pashto *soe*, Pamir *süi*] exhibits similar signs of antiquity. (*Cf.* Lat. canus 'grey' for the vowel.)

Two other small mammals lack convincing IE forms.

52) 'squirrel' ***u̯eEu̯er-** [Gallo-Lat. *vīverra*, W. *gwiwer*, Br. *gwiber*, Gael. *feòrag*; Lith. *vėverìs*, *voverìs*, OPrus. *weware*; Pol. *wiewiorka*, Cz. *veverka*, OR *věverica* 'acorn'; Farsi *varvarah* 'acorn'] is largely

confined to the northwest; see Witczak (1996:176) for a discussion of a possible substrate reflex in Germanic.

53) 'badger', though attested archaeologically, lacks a convincing IE reconstruction and may not have been a significant animal in their world view. OE *brocc*, commonly taken to be a loan from Insular Celtic, could reflect PG _*bruk-_ < PIE _*mr̥g-_ which in turn could be akin to PII _*mr̥g-o-_ (OIn. *mr̥ga-* 'wild beast', Av. *mərəɣō* 'bird of prey' < PIE 'scavenger'. See Belquist (1993) for a discussion of the forms for 'badger'. For the hedgehog, see #36 above.

ANIMAL HUSBANDRY

The vocabulary of animal husbandry is more extensive than that of agricultural pursuits, suggesting the greater economic importance of such activity in the proto-culture.

54) 'domesticated animal' __*k^{w}etu̯orped-__ (lit. 'four-footed') [Lat. *quadrupēs*, OE *fiðerfōt*, Alb. *shtazë*, OIn. *catuṣpad-*], contrasts with the following term.

55) __*du̯i-ped-__ (lit. 'two-footed') [Lat. *bipēs*, OIn. *dvipad-*], a common designation for 'human being'.

56) 'dog' __*k̂uon-__ [Lat. *canis* (probably a rural loan); OIr. *cú*, W. *ci*; (PG _*χun-ðaz_ (ON *hundr*, OE/OFrs./OS *hund*, OHG *hunt*, Go. *hunds*); Lith. *šuō*, Lett. *suns*, OPrus. *sunis*; R. *suka* 'bitch', < _*k̂u̯on-qā_; Alb. *samë* 'dog shit'; Gk. *κύων*; Arm. *šun*, *skund*; Skt. *śvan-*, Av. *span-*; TA, TB *ku*], the oldest domesticated animal, stands in a class by itself. Gimbutas endorsed Eric Hamp's claim (1980) that the domestic dog was originally a sheep dog and thus related to #57.

57) 'livestock' __*pek̂u-__ [Lat. *pecū*, Umb. *pequo*; PG _*feχu_ (ON *fé*, OE *feoh*, NE *fee*, OFrs. *fia*, OS *fehu*, OHG *fihu*, Go. *faihu*); Lith. *pēkus*, OPrus. *pecku*; OIn. *paśu*; Av. *pasu*], is a collective term; as Gimbutas noted, the word is usually related to 'comb' (*cf*. Gk. *πέκος* and Arm. *asr* 'fleece') and originally signified wool-bearing ovicaprids, the primary Near Eastern Neolithic domesticate.[11] Flocks were regularly contrasted with humans in a stereotypic phrase:

58) 'men and flocks' __*pek̂u- u̯iHro-__ [Lat. *pecudesque virosque*; Umb. *pequo ueiro*; Av. *pasubya viiraēibya*]. The antiquity is vouchsafed not only by the extremes of distribution in Italy and Iran but also by its

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[11] Benveniste's attempt (1970) to derive the animal names from an abstract concept 'movable wealth' is flawed by a failure to appreciate the fact that, at this time depth, movable wealth would only have moved on its own four feet.

petrifaction in such archaic ritual texts as the *Iguvine Tables* and the *Avesta*.

Most of the early Neolithic livestock form a patterned set illustrated in the TABLE in which the unmarked term refers to the female of the species, as even today 'cow' does in English. Special terms designate the male and the young, with occasional terms to designate the castrate.

	female	male	immature	castrate
canines	**k̂uon-*	**k̂uon-*	**k̂uon-*	
sheep	**Hou̯i-s*	**moiso-s*	**u̯r̥-en-*	
goats	**diHĝho-s*	**Haĝ-o-s*	**qap-ro-s*	
swine	**suH-s*	**ĝhoi-r̥*	**pork̂-o-s*	
cattle	**gwou-s*	**Hug*^{w}*-sen-*	**u̯ak̂-*	**steuH-ro-s*

TABLE: DOMESTICATED ANIMALS OF THE INDO-EUROPEANS

59) 'sheep, ewe' ***Hou̯i-** [Lat. *ovis*; OIr. *ói*; OE *eowe*, NE *ewe*, OHG *ouwi*, Go. *awi-str* 'sheep pen'; Lith. *avìs*; OCS *ovĭ-cŭ*; Gk. *ὄϊς*, Arg. *ὄϝις*; Arm. *hov-iw* 'shepherd'; Luw. *ḫawi-*, HH **ḫa-wi-i-ša**, Lyc. *χawã*; OIn. *ávi-*]

60) 'ram' **moíso-** [OIc. *meiss* 'box, barrel'; Lith. *máišas* 'bag, sack', OCS *měxŭ* 'skin, bag', OIn. *meṣa-* 'ram, skin'; Av. *maēša-*] appears to reflect an original animal term shifted in Balto-Slavic to the container made of the hide and thence to a specific wooden container in Germanic. This distribution assures its IE antiquity.

61a) 'lamb' ***u̯r̥-en-** [Gk. *ἀρήν*, Dor. *ϝαρήν* 'lamb', Arm. *gaṙn* 'lamb', OIn. *úrā* 'ewe'; Farsi *barra*], is confined to the east, but its former presence may be deduced from Slavic developments of the western replacement.

b) ***Hag**$^{w(h)}$**-no-s** [Lat. *agnus*, OIr. *úan* < **ognos*, W. *oen*, Cor. Br. *oan*; PG **aʒw-n-* (OE *ēan-ian*, NE *yean*) 'to lamb'; OCS *agnę* (contamination from **u̯r̥-en-*); Gk. *ἀμνός* dissimilated < **ἀβνός*].[12]

62) '(nanny) goat' ***diHĝ**^{h}**o-s** [OHG *ziga*; Alb. *dhī*; Gk. *δίζα·αἴξ*; Arm. *tik*].

63) 'billy goat' ***Haĝ-o-s** [Lith. *ožys*, OPrus. *wosee*; Gk. *ἀσκός* 'skin bottle' < **ἀγ-σκος*; OIn. *ajá*].

64) 'kid' ***qapro-** [Lat. *caper*, Umb. *kabru*; PCt. **gabros* (OIr. *gabor*, W.

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[12] Unlike substrate loans, it is the consonant that is problematic in this form. The Greek, Latin, and Slavic forms are better taken from **g*^{w}, not **g*^{wh}, but the Celtic and Germanic point to the

gafr);[13] PG **χafraz* (ON *hafr*, OE *hæfer*, NHG *Haber-geiß*); OIn. *kápṛthá-* 'penis'] is distributed through the IE area.

65) 'sow, swine' ***suH-** [Lat. *sūs*, Umb. *sif*; W. *hw-ch*; PG **sūz* (ON sýr, OE/OS/OHG *sū*); Lett. *su-vens* 'piglet'; OCS *sv-inija*; Alb. *thi*; Gk. ὕς; OIn. *sū-kara* 'wild boar'; Av. *hū* 'wild pig', Oss. *χui* 'boar'; TB *suwo*] is the generic term, signifying a domestic animal everywhere but Indo-Iranian.

66) 'boar' PIE ***g^{h}oi-ṛ** [Alb. *derr* < **ĝhoi-r-no-*; Gk. χοῖρος < **ĝhoi-ro-*] is geographically restricted, but the peculiar extension in Albanian suggests an old r/n heteroclite; the more widely quoted **†äp-ör-os** [Lat. *aper*, Umb. *abrof*; PG **eburaz* (ON *jǫfurr* 'leader', OE *eofer*, OHG *ebur*; Lett. *vepris*; OCS *veprĭ*, SC *vȅpar*, Pol. *wieprz*, Cz. *vepř*; Thracian ἔβρος 'goat'], with its problematic initial vowel, is confined to the northwest. Rare Gk. κάπρος 'boar' may be related to #64 above.

67) 'piglet, farrow' ***pork̂-o-s** [Lat. *porcus*, Umb. *purca*; MIr. *orc*; PG **farχaz* (OE *fearh*, OHG *farah*); Lith. *paršas* 'barrow'; OCS *prasę*, SC *prase* < **pork̂-ent-*; Saka *pāsa*], once thought to mean 'tame swine' and to be confined to the west, is now seen throughout the IE area with the meaning 'young pig'.

68) 'cow' ***g^{w}ou-s** [Lat. *bōs*; OIr. *bó*, W. *buwch*; PG **kū-z* (ON *kýr*, OE *cū*, OHG *chuo*); Lett. *gùovs*; OCS *gov-ęždĭ*; Gk. βοῦς; Arm. *kov*; HH *wawa*, Lyc. *wawã*; OIn. *gau-*; Av. *gau-*, Farsi *gāv*, Oss. *qūg*; TA *ko*, TB *keu*] is common IE.

69a) 'bull' ***Hug^{w}-sen** [MIr. *oss* 'stag', W. *ych*; PG **uχsan-* (ON *oxi*, OE *oxa*, OHG *ohso*; Go. *auhsa*); OIn. *ukṣan-*; Av. *uxšan-*; TB *okso*], a well-distributed form derived from **Hug*^{w}- 'sprinkle', designated the intact male.

b) **†tauro-s** [Lat. *taurus*; OIr. *tarb*, W. *tarw*; Lith. *taũras* 'wild ox'; OCS *turŭ* 'wild ox'; Gk. ταῦρος] is an Old European loan (ultimately from PS **ṯawru*) found in central European languages, which should not be confused with the castrate, #70 below. The Baltic-Slavic shift to 'wild ox' indicates that the Old European term did not refer to IE cattle, but to animals that were somehow classed as 'other'.

70) 'steer' ***steuH-ro-s** [PG **(s)teura-z* (ON *þjór*, *stjórr*, OE *stēor*, OHG *stior*, Go. *stiur*); Alb. *ter*; Av. *staorō* 'cattle'] is not only semantically distinct from the preceding, but has a different ablaut grade. Such animals supplied much traction, see #76 below.

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aspirate.

[13] The initial shows contamination from *g^{h}Hido- [Lat. *haedus* 'kid' and PG **gait-* 'nanny' (ON *geit*, OE *gāt*, OS *gēt*, OHG *geiz*, Go. *gaits*)] which may be a metathesis of #62.

71) 'calf' ***u̯aḱ-** [Lat. *vacca*, OIn. *vaçā*], distributed in the extreme east and west, signified an immature female.

72) ***E$_1$eḱu̯o-s** 'horse' horse [Lat. *equus*; OIr. *ech*; ON *jór*, OE *eoh*; Lith. *ašva*; Gk. *ἵππος*; Lyc. *esbe-*; OIn. *aśva-*; Av. *aspa-*; TA *yuk*, TB *yakwe*] The nearly ubiquitous horse figured prominently in IE given names, *e.g.*, ON **Jó***rekr* = **Yo***rick*; Gk. **Ἱπποκράτης**, **Φίλλιππος**; OPers. ***Aspacanā*** (Ἀσπαθίνης), ***Višt*****āspa** (Ὑστάσπης), Av. ***Kərəsaspa***, and OIr. *Fergus Mac Ro-****ich***

Unlike long-domesticated species, few anatomical differences distinguish wild horses; thus, there is no distinct IE term, but domestication may be inferred from a series of words describing the breeding stock.

73) 'mare, colt' ***pl̥-/*pōl-n-i̯eA$_2$** [Lat. *pullus*; W. *eb-awl*; OE *fola*, ON *fyllja* (foal, filly); Alb. *pelë*; Gk. *πῶλος*].

Many terms referring to domesticated Near Eastern species appear as later loans in IE languages, *e.g.*

74) 'onager' [Lat. *asinus*; Gk. *ὄνος*; Arm. *ēš*] are culture-words, *cf.* Sum. ANSE.[14]

75) 'camel' Gk. *κάμηλος* is borrowed from a reflex of PSem. **gml*; OIn. *úṣṭra* and Av. *uštrō* reflect Caucasian **uṭṭu*.

There are a number of terms relating to animal traction, further suggesting animal domestication. These terms, along with those for 'wool' and dairy products indicate that the Indo-Europeans fully participated in what Andrew Sheratt has termed the 'secondary products revolution' (1983). Like terms for metallurgy, these items confirm Gimbutas' dating of the Indo-European dispersal at the 4th millennium BC, a time-frame consistent with the dating of the earliest phases of the Kurgan horizon of the North Pontic Steppe.

76) 'yoke' ***i̯ugʷo-m** [Lat. *iugum*; W. *iau*, Br. *yeo*; PG **yuką*, (ON *ok*, OE *ʒeoc*, OS *juk*, OHG *joh*, Go. *juk*); Lith. *jùngas* (with *n* from *junkti* 'join'), Lett. *jūgs*; OCS *igo*; Gk. *ζυγόν*; Arm. *louc*; Ht. *iukan*; OIn. *yugám*, Farsi *ǰuγ*] was noted by Gimbutas as a clear sign of the presence of domestic beasts of burden.

77) 'mount' ***stigʰ** [OIr. *tíagu* 'stride'; PG **stīgan* 'climb' (ON *stíga*, OE *stīʒan*, OFrs. *stīga*, OS, OHG *stīgan*, Go. *steigan*); Lith. *steĩgti* 'found'; OCS *po-stignǫti* 'reach'; Alb. *shteg* 'a line'; Gk. *στείχω* 'go'; OIn. *stighnoti* 'climb, master'] confirms Gimbutas' assumption of IE horse-riding by its diverse semantic evolution, horse-riding, which necessitates climbing and maintaining straight ranks.

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[14] In Hittitological conventions Sumerian words are given in Roman capitals to distinguish them

At the time of IE dispersal, at least three different terms for the most advanced vehicular technology, the wheel, were in current use.

78) 'wheel' ***dhrog^{h}o-s** [OIr. *droch*; ME *draye* 'sled'; Gk. *τροχός*] is probably the oldest term, derived from a root meaning 'run' (*cf.* Gk. *τρέχω*); it may have originally signified a sledge-runner or roller.

79)***k^{w}ek^{w}lo-s** [OE *hwēol*; Gk. *κύκλος*; OIn. *cakrá-*; Av. *caxrō*, TB *kukäle*], the most widely distributed, is derived from a root meaning 'turn' and clearly signifies a true wheel. This is the form most often cited by Gimbutas, though she also cites the following:

80) ***rot-A$_{2}$-** [Lat. *rota*; OIr. *roth*, W. *rhod*; OFrs. *reth*, OS *rath*, OHG *rad*; OIn. *ratha* 'chariot'; Av. *raθō* 'chariot'] may exhibit a collective -*A$_{2}$*-suffix, referring to the wheel and axle assembly, whose parts are also attested and cited by Gimbutas in the following two words.

81) 'hub' ***nob^{h}-eA$_{2}$** [PG **naƀō* (ON *nǫf*, OE *nafu*, OHG *naba*; Lett. *naba*, OPrus. *nabis*; OIn. *nā́bhi*; Av. *nabā-*, Farsi *nāf*].

82) 'axle' ***Hăk̂s-** [Lat. *axis*; MIr. *ais*; PG **aχsō* (OE *eax*, OFrs. *axe*, OS, OHG *ahsa*; Lith. *ašĩs*, OPrus. *assis*; OCS *osĭ*; Myc. *a-ko-so-ne*, Gk. *ἄξων*; OIn. *ákṣa-*]. The derivative **Hak̂s-le-A$_{2}$* has the meaning 'shoulder' in Germanic and 'wing' in Latin, eventually giving 'axle' in English and Welsh; the simplex, however, is always 'axle', the IE meaning.

83) '(lynch)pin' **†tul-** [PG **þulnaz* 'thole' (ON *þollr*, OE *þoll*, OFrs. *tholl*, NHG *Dolle*); Lith. *tulìs* 'lynchpin'; Alb. *tul* < **tul-no-* 'boneless meat'; Gk. *τύλος* 'wooden bolt'] has been reconstructed as 'lynch-pin', but as Gimbutas noted, this meaning is confined to northern languages. It is probable that the Greek meaning 'wooden bolt' was original and that specializaton to wheeled vehicles (in Baltic) or marine usage (in Germanic) was a later feature.

84) 'transport' ***u̯eg^{h}(H)-** [Lat. *veho*; PG **weganą* (ON *vega*, OE *weȝan*, OS/OHG *wegan*); Alb. *vjedh* 'steal'; Lith. *vèžti*; OCS *vezǫ*; Pamp. *ϝεχέτω* 'let him bring'; OIn. *vahati*; Av. *vazaiti*] and numerous nominal derivatives are cited by Gimbutas:

85) [Lat. *vehi-culum* and OIn. *vahítra-m* < **u̯eĝ^{h}H-tlo-m* 'vehicle'; OIr. *fén*, W. *gwain* 'chariot' < **u̯eĝ^{h}-no-*; ON *vagn*, OE *wæȝn*, and NE *wain* 'wagon' < **u̯óĝ^{h}-no-*; Lith. *vežimas* 'wagon' < **u̯eĝ^{h}-imo-*; OCS *vozŭ*, Myc. *wo-ko* , Gk. *ὄχος* 'chariot' < **u̯óĝ^{h}-o-*; Alb. *udhë* 'road' < **uĝ^{h}-eA$_{2}$*].

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from italicized Hittite forms.

TEXTILES

The products of animal domestication included textiles and weaving.

86) ‘weave’ ***u̯eb**^{h} [PG **webanq̧* (ON *vefa*, OE *wefan*, OFrs. *weva*, OHG *weban*); Alb. *vêj*; Gk. *ὑφαίνω*; OIn. *ubhnāti*; Farsi *bāfad*; TA, TB *wāp-*].

87) ***Hu̯l̥H-neA** ‘wool’ [Lat. *lāna*; W. *gwlân*, Cor. *gluan*; OE *wulla*, OHG *wolla*, Go. *wulla*; Lith. *vìlnā*, Lett. *vilna*, OPrus. *wilna* ‘cloak’; OCS *vlŭna*, SC *vȕna*; Gk. *λῆνος*, Dor. (ϝ)*λᾶνος*; Ht. *ḫulana-*; OIn. *ū́rṇā*; Av. *varənā*]

No words can be reconstructed for ‘cotton’, ‘loom’, or ‘loom weight’, which are all developments that first occurred in the Balkan-Aegean area. See Barber (1991) for details of the spread and evolution of textile manufacture and especially (79-125) for an enlightening discussion of looms and weaving apparatus.

Though not specifically mentioned by Gimbutas, milk products, which evidence a stock-breeding economy, are also well recorded.

88) ‘to milk’ ***A$_{1}$melĝ-** [Lat. *mulgeo*; OIr. *bligim*; PG **melkanq̧* (ON *molka*, OE *melcan*, OFrs. *melka*, OHG *melchan*); Lith. *mìlžti*; OCS *mlŭzǫ*, Alb. *mjel*; Gk. *ἀμέλγω*; TA *mālklune*][15] preserves a verb denoting the activity.

89) ‘milk’ ***ĝ(o)lAq-t**[16] [Lat. *lac-tis*; Alb. *dhallë-t* ‘buttermilk’, Rom. *ʒară*; Gk. *γάλα(κτος)*; Ht. *galaktar-* ‘nutriment, tree sap’ *gala(n)k-* ‘soothe, satiate’] is a separate noun, a sign that the industry was quite old within the culture.[17]

Four words indicate milk that has been processed.

90) ‘cream’ ***roug**^{h}**-mo-** [PG **reuʒma(n)-* (ON *rjúmi*, OE *rēam*, MLG *rōme*, MHG *roum*); Farsi *rōgan*, Av. *raoγnəm* ‘butter’].

91) ‘whey’ ***k**^{w}**sir-** [ON *skyr* ‘curds’ < **sk*^{w}*ir-i̯o-m*; Alb. *hurdhë* ‘curds’ < **k*^{w}*sēir-Dā*, *hirrë* ‘whey’ < **k*^{w}*sir-no-m*; OIn. *kṣīram*; Av. *xširəm*].

92) ‘butter’ ***selpE-es-** [PG **salƀō* (OE *sealf*, OS/OHG *salba*); Alb. *gjalpë-t*; Gk. *ἔλπος·ἔλαιον*, *στέαρ*, Cypriot *ἔλφος·βούτυρον*; OIn. *sarpis-* ‘fat, butter’; TA *ṣälyp*, TB *ṣalype* ‘fat, butter, oil’].

93) ‘curds’ ***d**^{h}**e-d**^{h}**E-** [OPrus. *dadan*; Alb. *djathë-t*; OIn. *dádhi*].

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[15] The Tocharian vocalism reflects a metathesis, **ml̥*A_{1}*ǵ-*, also seen in the Lithuanian accent.

[16] Karlgren reconstructed an Old Chinese *lac/glac* for *ca*. 1000 BC, possibly borrowed from an IE language. See Pulleyblank (1966) for details.

[17] The Romanian word has been borrowed from some Balkan language akin to Albanian.

METALLURGY

Only a few IE metals are reconstructible.

94) 'metal, copper, bronze' ***AeiE-es-** [Lat. *aes*, *aēnus*; PG **aizą* (ON *eir*, OE *ār* > *ore*, OS, OHG *ēr*, Go. *aiz*); OIn. *áyas* 'bronze, iron', Av. *ayaŋhō* 'metal, iron'] was the unmarked term for metal, an archaic s-stem neuter of assured antiquity.

95) 'gold' ***Aeus-om** [Lat. *aurum*, Osc. *ausom*; OLith. *aušas*, *aukšas*; TA *wäs*, TB *yasa* < PT **wesā* < **Au̯es-eA**$_2$] is also neuter and probably a substantized adjective, 'yellow or the like', modifying #94.

96) 'silver' *$\mathbf{A}_1$**erĝ-n̥t-om** [Lat. *argentum*; OIr. *airgead*, W. *arian(t)*; Arm. *arcat*^{c}; Ht. KU.BABBAR-*anza* (**ḫarkanz*), Luw. KU.BABBAR-*an* (**ḫarkan*), Av. *ərəzatəm*, OP *ardata-*] was also such an adjective, obviously 'white'.

The absence of any clear term for 'lead', a prerequisite for cupellation of silver in Old World prehistory, indicates that the Indo-Europeans knew silver only as a trade commodity. See Mallory and Huld (1984) for archaeological and philological details.

PHYSICAL ENVIRONMENT

Efforts to identify the IE homeland through references to the physical environment are also fraught with difficulty.

97) 'large body of water, sea' ***måri** [Lat *mare*; OIr. *muir*; PG **mari* (ON *marr*, OE, OFrs. *mere*, OHG, *meri*, Go. *marei*); Lith. *mārė*; OCS *more*; Ht. *marmarra* 'moor'; Oss. *mal* 'deep standing water'] is the most disputed term. The word was formerly thought to have been confined to the west, but an Iranian cognate is found in Ossetic. The precise nature of the body of water referred to cannot, however, be determined.

98) 'wave' ***u̯l̥H-ni-/mi-** [PG **wellan-* (OE *wiell*, OFrs. *walla*, OHG *wella*); Lith. *vilnìs*; OCS *vlŭna*; Alb. *valë*; OIn. *ūrmi-*; Av. *varəmiš*] not adduced by Gimbutas, likewise signifies only a large body of water.

99) 'salt' ***sal-d-** [Lat. *sāl*, Umb. *salu*; OIr. *salann*; PG **salt* (ON *salt*, OE *sealt*, OFrs., OS *salt*, OHG *salz*, Go. *salt*); Lith. *sald-ùs* 'sweet', Lett. *sȁls*; OCS *solĭ*; Alb. *gjollë* 'salt-lick'; Gk. ἅλς; Arm. *al*; OIn. *sal-ilá-* 'salty'; TA *sāle*] also does not assure knowledge of the sea, much less contact with it.

100) 'eel' †**Hn̥g**^{wh}**-Vl-** [Lat. *anguilla*; Lith. *ungurỹs*, OPrus. *angurgis*; PS **ǫgorĭ* (Pol. *węgorz*, R. *ugorĭ*; Alb. *ngjalë*; Gk. ἔγχελυς; Ht. *illyanku-*] was formerly thought to occur only in the west. Most of the terms are derivatives from 'snake' (#36). PG **ǣlaz* is generally regarded as a substrate word, but Witczak (1996:175) has identified PG

**ǣlaz* as a loan from a lost IE language. None of the forms are clear enough to warrant an IE reconstruction.

101) ***piH-u̯er-iA$_2$** ‘pasture land, "fatted" land’ [Gallo-Roman *Iberia*; OIr. *Ériu*, W. *Iwerddon*; Gk. Πίϝειρα γῆ; OIn. *pívarī*], not mentioned by Gimbutas, is another indication of the importance that stock-breeding held in the economy. Such concepts tinged even the religious life of the people.

RELIGION

102) ***pḷtA$_2$u̯-iA$_2$** ‘Broad Earth’ [Gl. *Letauia*, W. *Llydaw*; OE *Foldan*; Gk. Πλαταία; OIn. *Pṛthivī*], a place-name, was deified in Germanic and Indic, often in conjunction with her fructifying consort.

103) ***di̯ēus pAtēr** ‘Sky Father’ [Lat. *Juppiter*; Gk. Ζεῦ πάτερ; Ht. ^{d}*Šiuš*; OIn. *Dyaus pitar*], her husband, was the chief deity of the IE pantheon.

104) ***A$_1$usōs** ‘Dawn’ [Lat. *Aurōra*; OE *Eostre*; Lith. *Aušrà*; Gk. Ἕως; OIn. *Uṣās*; Av. *Ušå*] represents another of the most widely attested figures in IE mythology. See Robbins (1978) and Dexter (1996) for details.

SOCIAL ORGANIZATION

105) ***tpolH-s** ‘hillfort’ [Lith. *pilis*; Gk. πτόλις; Arm. *k̇ałak̇* (see Hamp 1985); OIn. *pūr*] was a conspicuous feature of the IE landscape often noted by Gimbutas.

106) ***u̯ik̑+poti-s** ‘lord of the settlement’ and ***u̯ik̑+pot-niA$_2$** ‘lady’ [Lith. *viẽšpats*; Alb. *zot*, *zojë* (see Huld [1985] for phonological details); OIn. *viśpat*, *viśpatnī*; Av. *vispaitiš*] indicate the hierarchical nature of IE society, which Gimbutas frequently alluded to.

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Linguistic Abbreviations

Alb.	Albanian
Arg.	Argolic
Arm.	Armenian
Av.	Avestan
Br.	Breton
Cor.	Cornish
Cor.Br.	Cornish, Breton
Cz.	Czech
Dor.	Doric
Egy.	Eyptian
Fr.	French
Gael.	Gaelic
Gk.	Greek
Gl.	Gaulish
Go.	Gothic
HH	Hieroglyphic Hittite
Ht.	Hittite
Kurd.	Kurdish
Lat.	Latin
Lett.	Lettish
lit.	literary
Lith.	Lithuanian
Lomb.	Lombardic
Luw.	Luwian
Lyc.	Lycian
MHG	Middle High German
MIr.	Middle Irish
MLG	Middle Low German
MW	Middle Welsh
Myc.	Mycenean
NBS	North Balkan Substrate
NE	New English
NHG	New High German
OAlb.	Old Albanian
OCS	Old Church Slavic
OE	Old English
OFrs.	Old Frisian
OHG	Old High German
OIn	Old Indic
OLith.	Old Lithuanian
OIr.	Old Irish
ON	Old Norse
OPers.	Old Persian
OPol.	Old Polish
OPrus.	Old Prussian
OR	Old Russian
OS	Old Saxon
Osc.	Oscan
Oss.	Ossetic
Pamp.	Pamphylian
Pct.	Pictish
PG	Proto-Germanic
Phr.	Phrygian
PIE	Proto-Indo-European
PII	Proto-Indo-Iranian
PIrn.	Proto-Iranian
Pol.	Polish
PS	Proto-Slavic
PSem.	Proto-Semitic
PT	Proto-Tocharian
R.	Russian
Rom.	Romania
SC	Serbo-Croatian
SGo.	Salzburg Gothic
Skt.	Sanskrit
Sp.	Spanish
Sum.	Sumarian
Swed.	Swedish
TA	Tocharian A
TB	Tocharian B
Umb.	Umbrian
W.	Welsh
YAv.	Younger Avestan
Žem.	Žemaitian

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